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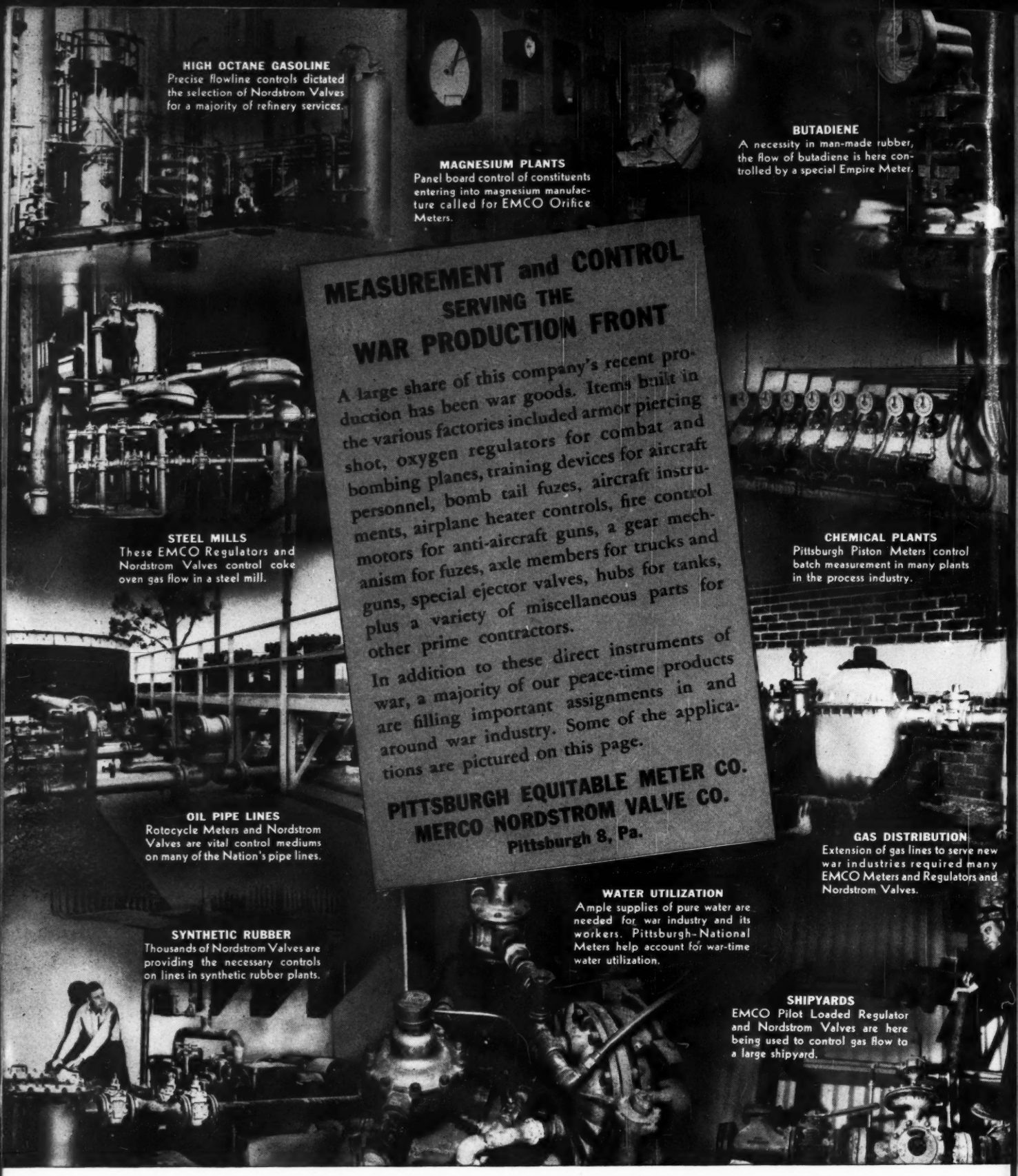

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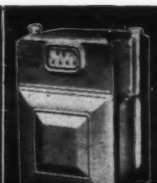
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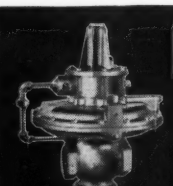
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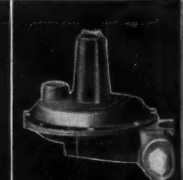
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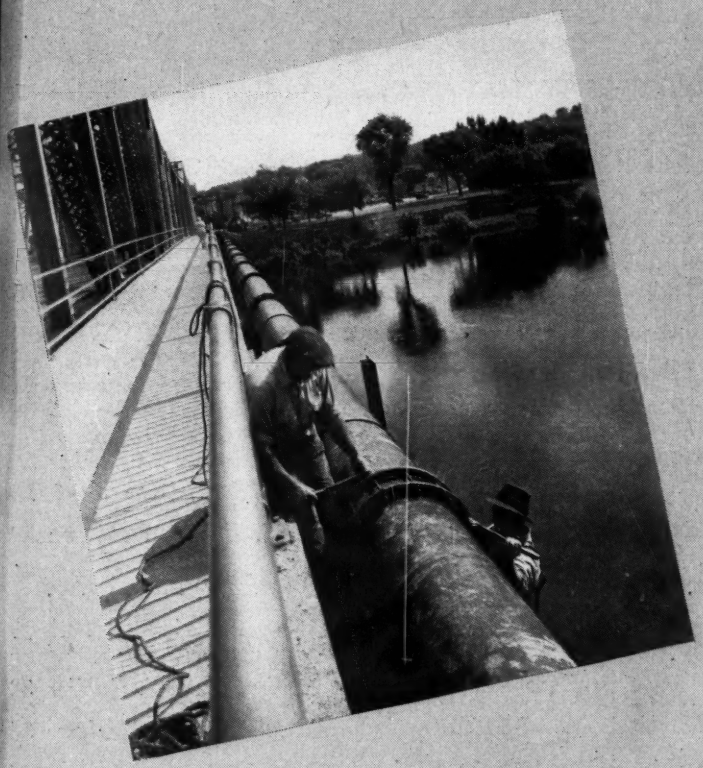

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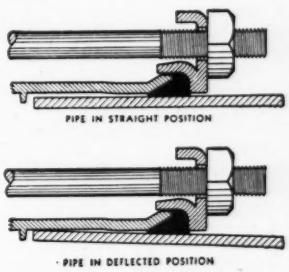

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Twentieth Year of Publication

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A Job for Top Management

By E. H. POE, Gas Consultant

THE storehouse of 113 trillion cubic feet of natural gas reserves in the nation, and the potential increase that is imminent, combine to create a total that indicates unprecedented opportunity for industry expansion and greater service to the American public.

That the natural gas industry is doing an excellent war job is too well known to require restating. Its postwar plans, now progressing toward the functional stage, are comprehensive in scope, embracing as they do programs of business development on the one hand, and plans for continued technological advancement on the other. In general the financial position of the industry is satisfactory. Manufacturers of appliances and other gas utilization equipment may also expect to emerge from the war period in an economic position stronger than any ever before occupied in their history. The manpower of all segments of the industry is geared to an alertness that augers well for its future.

Regulatory bodies on the other hand, while they seem to display an increasing understanding of industry problems and a disposition to discuss contemplated or proposed moves with an open mind, still represent in the writer's opinion a conspicuously neglected field into which an intelligent and objective industry attitude should be projected.

No amount of progressive planning can in the long run offset the damage than can be done to the industry by misconceptions planted and nurtured in political high places. It is axiomatical that all of the accomplishments of regulated utilities in the direction of business development, technological improvements and enhanced service to the public can be negated by inequitable regulatory orders and adverse political attention. The fact that such adverse action may have its genesis in misconceptions rather than a desire to hamper industry growth and expansion, becomes purely academic if such action is to penalize the industry for increased operating efficiencies, advanced techniques, and capable management. It would seem therefore that a forerunner of any concerted planning must provide for political, social and economic rapprochement between the natural gas industry and all governmental bodies having jurisdiction over any phase of its operation.

The generalship of such a program is primarily a top-management concern. Its importance is such that it transcends the individual interest of every industry employee, every royalty owner, every producer and every security holder.

Fortunately the experience that we have all gained in the coordination called for by the war effort has given us a pattern of procedure that we can well adapt to peacetime dealing between industry and government. The writer's personal experience in connection with this coordination has convinced him that constructive results may be obtained by the organization of top executives of the industry to cooperate with the Federal Power Commission and other bodies in a manner paralleling the cooperation that has been given the Petroleum Administration for War and the Office of War Utilities during the war.

Such a group would concern itself in the initial stages of its activities with bringing before the commission or other agencies all of the source material and facts necessary to create simplification of procedures and the promulgation of rules, regulations and conditions of service under which the industry can operate capably.

Susceptible to the same approach would be the all-important matter of proper allowances for depreciation, value of natural gas reserves attached or dedicated to a given gas system, and the overall problem of evaluation for rate making and resultant basis of net return to be allowed. Heretofore studies of this nature have been presented largely in the heated atmosphere of rate case trials, where cool objective consideration has too often given way to the momentary rule of prejudice and caprice.

Certainly such an activity on the part of the top minds and the top influences in the industry would be worthy of their greatest talents. If the result were to be the final arrival at a firm basis whereby the industry could operate under clear and unequivocal regulations, that alone would be well worth any effort that might have to be expended.

The approach to every controversial question, and there will be many, should be identical for both industry and government—the desire to give the public, which both serve, the advantages of the greatest good for the greatest number, at fair and equitable cost over a maximum number of years.

The scanning of the skies for some portent of political good fortune to come appears futile. The industry's adversaries are both political and competitive. The postwar success of the natural gas industry can be greatly added to by making the most of whatever legitimate opportunities now prevail without waiting too long for the desirabilities of a remote political tomorrow. Tackling the task is a job specification that necessity has already written up for top management in the industry.

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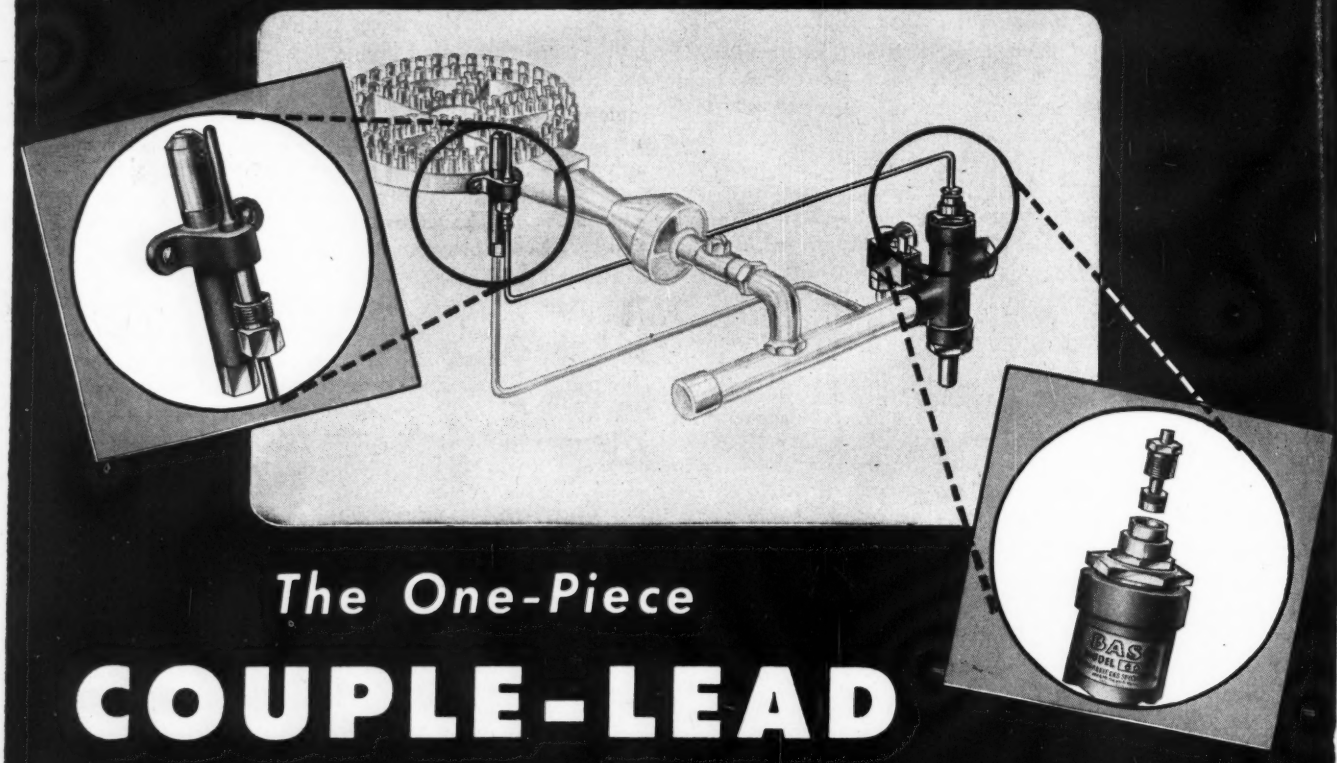

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Thermally Thinking

By ELLIOTT TAYLOR, Washington Editor

Committees

A THOUGHT provoking and timely paper on the problems now arising in connection with the movement of natural gas in interstate commerce was read before the natural gas spring conference by R. E. Wertz, president of the Amarillo (Texas) Gas Co., and past chairman of the former natural gas section of the American Gas Assoc. Foreseeing an era after the war of "increased opposition to exportation of gas by the major producing states," and attempts made "to prevent the utilization of gas for what are considered to be uneconomic uses," the speaker expressed the opinion that the new Natural Gas Department of the AGA had arrived on the scene "just in time to grapple with these problems."

While we heartily agree with the speaker that climaxing considerations of a political and regulatory nature are looming large in the future of the natural gas industry, we do not share his conviction that the new Natural Gas Department will prove to be an agency adequate to cope with the issues that will be raised.

The traditional policy of the American Gas Association has been to avoid political or legislative activity, and the new department will of necessity have to conform to that policy. True, the policies of the association can and do undergo occasional changes, but the process is too ponderous, the cadence too slow to inspire any confidence in the imminence of a new approach toward legislative and regulatory relationships.

Yet the need for an organized and coherent presentation of the natural gas viewpoint on controversial questions before state and federal commissions and legislative bodies has already been amply demonstrated. In the recent instance of relief from excess profits taxes granted the industry by congress, the full brunt of the campaign had to be born by an *ad hoc* committee of natural gas executives operating without any semblance of official association support.

In view of the obvious necessity for some responsible agency of liaison between the industry and government, we believe the recommendations made in this month's guest editorial by E. Holley Poe merit careful consideration. We are by nature reluctant to advocate the appointment of yet another committee in a world that is full to overflowing with committee activity of every kind, but the case for a top executives' committee is a strong one.

As was further pointed out in the remarks of Mr. Wertz, "Our facts and conclusions (regarding the interstate shipment of gas) resulting from investigation and study will be of no avail unless they are convincing to the public authorities charged with the responsibility of making ultimate decisions. It seems obvious that the best results will be obtained by the fullest cooperation with such public authorities, not only in reaching ultimate conclusions but in the earlier stages of investigation and study."

There is one advantage in dealing with those at the top, in both industry and in public affairs, and that is that the power to make decisions and to put them into effect are both resident in the same individual. War time coordination of many industries, and always from the top, served to demonstrate the efficiency that could thus be achieved.

We believe that the spirit of mutual cooperation and confidence that has grown up between the PAW, the OWU and the natural gas industry can be utilized to bring about a closer understanding and appreciation of the several viewpoints of the industry and those permanent peacetime agencies with which it must continue to deal. But we also believe that a body more impressive in stature than just another association committee, and with a background more authoritative than the present Washington office of that organization, will be necessary to achieve the desired results. The top-management committee may quite conceivably be the answer.

Recommendation 32

AS we read through the summary of recommendations to the gas industry made in the AGA Postwar Planning Committee's Report No. 3, we are struck by the meticulous attention to detail that has marked the planners' studies, and by the essential simplicity and understandability of most of the 31 basic conclusions that form the bulk of the study.

The need for a united front of the entire industry, from manufactured and natural gas utilities along to the manufacturers of gas appliances and equipment is recognized, and an obvious attempt has been made to reconcile any conflicting interests that may exist. Even a sop to the electrical departments of combination gas and electric utilities is discernable in recommendation No. 9, which says that: "The use of electricity in the modern kitchen should be encouraged for those uses for which it is particularly suited, such as for lighting and power." If this is a formal recognition by the industry of the fact that gas has finally given up the struggle for the lighting load, the electrical brethren will no doubt appreciate the committee's reconciliation to an historical fact. But that they will be satisfied with the kitchen lighting and power classifications while gas assigns to itself such important little trifles as cooking, water heating, space heating, house heating and refrigeration is at present open to reasonable doubt.

In fact the post war planning committee knows better and admits it, when it says the spearhead of the electrical attack will be to get the cooking load away from gas, after which other household services such as offpeak water heating can be more readily promoted. Summarizing, the committee says, "Advertising must concentrate on the use of gas in the kitchen," and "The range load must not only be protected but developed aggressively."

Here is where we thoroughly agree, and because we agree, we are at a loss to discover why so little interest is taken in fitting into the program the interests and the potentialities of liquefied petroleum gas, the one gaseous fuel that is able and ready to take the fight right into the domain that electricity has blocked out for the first stages of its future expansion, into those rural communities and newly developing areas of decentralization where the extension of gas mains would be presently impractical.

In spite of the clarity of vision with which the AGA committee scans most of the postwar horizon, it shows

a lamentable lack of understanding of the present position and the future possibilities of LP-Gas when it views it as a competitor rather than as an ally of town gas interests. It is discussed under the heading "competitive fuels affecting the realization of potential markets" as a factor to be reckoned with in the same classification as electricity, coal and oil. And the only recognition of any community of interest that LP-Gas might have in the postwar promotion of all gas, is contained in recommendation No. 28 which condescendingly opines that "our industry should consider cooperation with the liquefied petroleum gas industry, particularly in serving fringe territory."

Further along in item 28, reference is again made to the "fringe territory," in the suggestion that LP-Gas will aid in holding such territory "until the extension of mains are justified." Here the committee falls back into an old fallacy of the manufactured gas industry, which holds that "cooperation" with LP-Gas consists in allowing that industry to serve an area until manufactured gas is ready to take over. As a matter of fact, the manufactured gas industry passed up the chance to use bottled gas as an advance guard for utility service 15 years ago, when its leaders looked the new fuel over and decided that they would have no part of it. Now LP-Gas doesn't regard itself as a side show to manufactured gas service extension; it looks on itself—and rightly so in our opinion—as the main event in the areas that it serves.

It is true that in many sections of the country LP-Gas is in a position to carry on a competitive struggle with manufactured gas on a rate per therm basis, but the record so far has been notably free of such competition. In communities where butane or propane have made some trifling inroads on gas utility customers it has only been possible because unconscionably high rates or inexcusably low standards of customer relations have thrown the door wide open to any type of competition.

What then does LP-Gas compete with? Well—wood and coal and buffalo chips, among other things; but they are not likely to be the subject of the committee's concern. Perhaps on rare occasions with natural gas, although we have yet to meet a natural gas sales manager who regards it as competition; and with manufactured gas only in those instances and under circumstances where the load was as good as lost anyhow to the first acceptable substitute to come along.

It is electricity, and the electrical departments of combination gas and electric utilities, that are most apprehensive of the possibilities of LP-Gas, and with plenty of good and sufficient reason. LP-Gas is the most potent challenger of all to electricity's plans to progressively invade the cooking and water heating market, starting in rural areas, and spots where cheap subsidized power is available and working into the big population areas from there.

We have no quarrel with combination utilities, and we certainly have no right to object to the plans formulated in their electrical departments to dominate the cooking and water heating fields wherever and whenever they can. But we do object to use of the American Gas Association, or any of its committees as a catspaw to pull the kilowatts out of the competitive fire.

In its postwar planning, the electrical industry as a whole is going ahead with ambitious schemes that ask no favors of any competing industry, and that propose to extend none. That is all the more reason, therefore, why it is a waste of time and a betrayal of the broadest interests of gas, and particularly of natural gas, for the postwar planners to allow electrical thinking to hold LP-Gas at arms length while the committee plays footie under the table with the electrical side of the combination utilities.

Manufacturers of gas appliances are being courted as essential cooperation, and possible sources of direct financial support to gas industry advertising campaigns and to new promotion schemes that are shortly to be unfolded. They have a right to demand that their customers in the LP-Gas industry be given the advantages of any industry development activities that they help to finance. They have a right to expect that the exploitation of the market for new gas appliances will be a comprehensive job and a complete one, not stopping short at the city boundaries so that electrical interests can take over.

It may be argued that LP-Gas has never participated in the cost of any gas industry promotion, which is probably true. On the other hand it is well to remember that the advertising committee of the AGA turned down the first offer of participation in industry advertising made by the Liquefied Petroleum Gas Association at least four years ago. After that rebuff we can well understand that many members of the LP-Gas industry feel that the next gesture of cooperation should come from the AGA.

Right on the spur of the moment we can't come up with 31 recommendations for the gas industry, but we offer with our compliments one modest proposal which we think might go far toward enlisting LP-Gas support for any postwar gas program:

RECOMMENDATION 32 (Recommendation 28 notwithstanding): In any gas industry advertising, promotional activity or other organized industry-wide contact with the public, the advantages of liquefied petroleum gas as a fuel for homes not served by natural or manufactured gas will be prominently stressed. In no presentation will LP-Gas be treated as a stop-gap fuel, but always as a full fledged member of the gas team, and the one most likely to arrest the extension of electricity for uneconomic uses.

Good Will

WE are indebted to Wallace Chamberlain, sales manager of the Michigan Consolidated Gas Co. in Grand Rapids, for a little booklet reproducing as charming and gracious a series of advertisements as we have been privileged to view in many a day. "In appreciation of Grand Rapids" is the title of the series which has appeared on an average of one every two weeks in the Grand Rapids newspapers for nearly a year.

There is a simple uniformity about the series, from the type style to the single black and white drawing that illustrates each subject treated. Best of all there is a complete lack of ostentation in the copy which accompanies each citation of civic distinction.

The city's symphony orchestra, its art gallery, its museums as well as other enterprises of a more practical nature such as the airport, industries and hotels are all considered along with a dozen or more other subjects of local interest and pride.

Notably absent from the brief texts is the patronizing smugness that so often creeps into institutional copy that carries with it no selling talk or commercial message of any kind. One gets the impression that the gas company is in point of actual fact genuinely proud of its Grand Rapids, and that Grand Rapids in turn may well feel the same way about its gas company.

Even in an outlander like ourselves, the series gives rise to a warm feeling of determination that we shall one day soon have to visit Grand Rapids again, on whatever plausible pretext we can conjure up at the time.

THE JOB AHEAD

By N. HENRY GELLERT

President, Seattle Gas Company

THE gas industry is about to enter the postwar period of World War II with the pre-war attitude of World War I. Those executives of the industry with vision enough to realize what such a frame of mind will do, find it difficult to make any serious impression on the industry as a whole. There is a thick hide of tradition and inertia upon which they can pound until they are blue in the face without making any dent on the thinking or the trends.

It is not so long ago that smug papers and speeches belittled the efforts of the electric industry to get any part of the cooking load. Statistics were developed to prove that the percentage of electric ranges sold each year, when compared to gas ranges, was so small that the gas industry had nothing to worry about. Currently, we have a statement in one of our gas journals that gas plays such a part in the every-day life of the community that there is no one competitor that can displace gas no matter how aggressive the attack; that practically every study of the changing gas markets agrees that the electric range has not been the major cause of the decrease in gas used per customer. Whatever these statements may mean, they encourage a false sense of security to the industry. Certainly the Committee on Postwar Planning of the AGA was not so confident when it stated in its report:

> "There is no use minimizing the serious nature of the gas industry situation. The question is whether the gas business will emulate the policy of some of our former enemies who choose not to struggle or whether Bataan, Guadalcanal and Salerno will be its inspiration to go forward."

No one has to depend on his memory to get the impact of the fruitless thinking that befogs us. All he has to do is to read the current committee reports, papers and advertising literature of the industry. That is enough to convince him that the industry expects to unveil after the war not a brand new, beautiful, statue carved out of new ideals, research and engineering, but the same old wooden dummy over which it threw the sand bags when the war broke out.

Because we have just been awarded recognition for one ad as among 100 best in war-time advertising, it does not change the fact that our national advertising has fallen far short of that dynamically used by the foremost industries in the United States. Currently we are paying for and running advertisments in the national magazines which, while they originally start out to have significance, have grown so syrupy that they engender in the hearts of those who have stakes in the war at least, a mild feeling of disgust.

We have just been put on notice by a prominent manufacturer of appliances that the postwar ranges were in essence to be the same old appliances that had been perfected before the war.

The lack of vision and drastic invention is not only true about our appliances and our national advertising, it is true about our selling program, our public relations and our manufacturing processes. We have been thinking of Postwar II planning with a Pre-World-War I psychology.

"The gas industry must develop a new cooking instrument. It must have cheaper and new methods of manufacturing gas; it must take an important place in the chemical industry and in the infant plastic industry. It must glamourize the use of gas; find new terms in which to talk to the women of America, and recognize that science or no science, the word "Electron" is worth more than a million "Btu's." Mr. Gellert's remarks were presented before the Pacific Coast Gas Association's Gas Industry Development Conference, Portland, Ore., April 26, 1944.

Because we lag a quarter of a century behind the upstanding industries of the nation, we are faced with the well-nigh impossible task of planning and putting into effect a program that will bring us up to date. From too much groping in a fog of our own creating, our vision is not clear. Because we have considered ourselves to be individually self-sufficient and have failed to cooperate fully with each other, we do our groping largely alone.

Now, what is the job ahead of us? It is so vast that we can not yet see its magnitude, but here are some of the tasks to be performed:

First, our Public Relations!

We executives try to provide and supervise adequate control of every portion of our manufacturing plants and distribution systems. We arrange to supervise and direct the work of our employees. We are much concerned with our physical assets. However, one of the biggest assets we possess never appears on our balance sheets. It is the good will of the public! It is never evaluated in terms of money, it is never written into the books of the company, and it never has any depreciation reserve set up against it. When it depreciates, it goes so rapidly that it often disappears entirely as an asset and shows up as ill will on the liability side of the ledger.

Too heavy hands have been used in the handling of public relations. There have been and there still are utilities who believe that public relations are controlled through political manipulation and political pressure. Their system of power politics helped to bring on some of the worst restrictions in the Holding Company Act, and even when it benefits themselves will continue to do the industry harm.

There are other utilities who approach public relations in the "Pollyanna" manner. They create jobs for vice presidents of public relations whose chief task is to attend all the chamber of commerce meetings, make speeches at the Rotary and Kiwanis clubs and tell the world, even though they know better, that everything is beautiful and lovely.

Neither of these methods can ever build sound and lasting good-will on the part of the public. There is only one way to preserve that most important of all assets. It is by treating the people fairly and with courtesy. Fairness alone is not enough. Courtesy and mannerliness are as much a part of management's responsibility as the establishment of rates.

It is not too unimportant for the chief executive to listen in on a monitoring system which can cut in on any telephone conversation. Such a monitor belongs in the executive offices, not on a dispatcher's desk. The management of public relations is one of the biggest jobs in the company.

Second, the Question of Research

The hodgepodge of research instituted by individual members of the gas industry has cost stockholders hundreds of thousands of dollars without proper compensation for the expenditure of such sums. The effort started about two years ago to unite this industry in support of a concerted program of fundamental research, without which no industry can hope to progress or even survive, has failed to arouse the interest and support of some of our largest members. It has been too easy for them to consult their learned lawyers and find out adequate reason for justifying a reactionary attitude by the plea of timidity.

This industry has no General Electric Co.—no Westinghouse. Unless it unites solidly in a program of fundamental research, it will find itself hopelessly surpassed by its competitors. Ironically enough, half a dozen industries know more about phases that vitally affect the future of the gas industry than the gas industry does itself. Petroleum chemists are already planning the production of products that normally should have been developed by the gas industry. Once they get the start in plastics and other resinous materials, they will squeeze them out of the oil before the gas industry discovers how to make use of them, or even that they are there.

Gas companies all over the country, with very few exceptions, are working in sublime ignorance of what the beginning raw materials and the end products of their processes of manufacture are capable of accomplishing, their nature or their complexities. Here is an industry which deals with coal and oil and knows practically little about them. The average water-gas operator shoots into his carbureters a given number of gallons of oil irrespective of its gravity, its distillation tests and its chemical composition until he discovers on the machine itself that there must now be a change. Experimentation in such plants is heavy handed. It is done on the equipment itself. Most of the gas companies of the United States have no chemical control whatever.

Where is the program devoted to the research on production of high Btu. gas from low grade coal? The petroleum industry goes to 80 octane —100 octane—120 octane and now tells us that it is producing power concentrates four times as great as 100 octane; yet we still blow steam through a water-gas generator and make low powered blue water-gas. Where is the program to show us how to use cheap electric power where hydro-electric power is available, using the weapons of our toughest competitor to produce gas cheaply enough to compete with him. Where is the program to discover how to convert the varied hydrocarbon products of which we are prime producers into high grade resins, plastics, plasticising oils and what not? Where is the program to show us how to produce the carbon black required by the new industry of synthetic rubber, and to supplant the extravagant methods of wasting natural gas in producing adequate blacks.

There is not even a centralized and complete library, with an adequate bibliography available to all of the scientific and engineering departments of the industry. The literature of the industry has not been collated and made easy for reference.

Research does not start at the top. Research starts at the bottom. Some of the most influential members of this industry have no more use for fundamental research than they have for the amoeba. They expect fundamental research to come out on a production line, each endeavor prepared to grind out immediate profits. They want research born like the Goddess Pallas Athena, who sprung full grown from Zeus' head. They cannot wait for a baby to be born. They want him produced in the fullness of manhood.

Third, our Utilization Equipment.

Let us not deceive ourselves when we talk of utilization equipment. If we do not develop equipment that will help us to hold the domestic load, there will be very little use for developing any other kind of utilization equipment. The heart of the gas business is the cooking load. Until and unless we devise some radically different method for the manufacture of gas and the development of by-products which will reduce the cost of manufacture to a negligible amount, the artificial gas industry cannot expect to lose the domestic load and survive. If natural gas increases in cost due to greater expense of exploration and development, the same thing will hold true for the natural gas industry.

Our thinking is tied too much to the past. Every improvement is weighted down by tradition and inertia. There has been too much resistance to the knowledge gained by the electric industry and an abhorent unwillingness to use in our own the controls which that industry developed for itself. In a day of automatic electrical ignition we are still using gas pilots. Long since, every appliance put out by the gas industry should have been equipped with automatic safety devices.

We think we accomplish something when we raise the efficiencies of our gas stoves from 20% to 30%, from 30% to 40% and from 40% to 50%. But with the menace of cheaper electric rates we are not going to fight any effective battle with decreasing margins of saving.

Needed, a cooking machine

The hour has struck for the complete abandonment of the gas stove. We need a cooking machine. We need a device so designed and equipped that it will cook a meal with practically no attention and for a cost far less than is possible with the cheapest electric power.

We must utilize that vast new horizon of thermodynamics which the aircraft industry has opened for us. That industry has learned how to carry off the tremendous amount of heat developed in a 2500-hp engine. It has learned more about the transfer of heat than the gas industry ever knew. It is time for our engineers to learn what the aircraft industry has to teach and to apply those same principles to the transfer of heat from our combustion chambers to cooking chambers. We need a cooking machine in which gas will be burned at maximum efficiency and the heat so generated will be transferred by the same devices used in aircraft motors to the cooking compartments. We need cooking vessels designed for just such a machine so that a woman may place her whole meal inside of it, predetermine the time it shall start to cook and the time it shall end, and be certain that it will control separately the cooking in every compartment so that when she opens up the cooking machine her meal will have been completely prepared for her. The excess heat developed during the cooking period must automatically be transferred to a built-in water heater so that no portion of the heat value in the gas shall be lost except that minimum irreducible amount which the best of our efforts is unable to retain.

There is hardly a single element needed for such a cooking machine which has not already been developed for us by other industries. Electric ignition, thermostatic controls, heat transfer devices, high-pressure cooking chambers, time-controlling instruments—all these are available to the engineers and the scientists of the gas industry. It only requires the application of brains and experimentation the challenge of ingenuity and

the united support of the industry for such a coordinated and well directed research program.

We stick to the good old Btu. To the poor housewife who does not understand what a Btu is, we explain that it is the British Thermal Unit! We have glamourized the gas stove by calling it the "CP Range"! Somehow we in the gas industry have not caught on to the fact that in America the women spend the money; that men only earn it. Even the scientists and engineers of the electrical industry have glamourized their conversation. In my day at school we spoke of positive ions and negative ions. That was before the electric industry discarded its swaddling clothes. Today it is neutrons and electrons. They have plastered the national magazines with full-page ads on ELECTRONICS. The difference between Electronics and the "CP" range is the difference between a Lilly Dache hat cocked over one eye and a good old Mennonite bonnet stuck on the top of a woman's head.

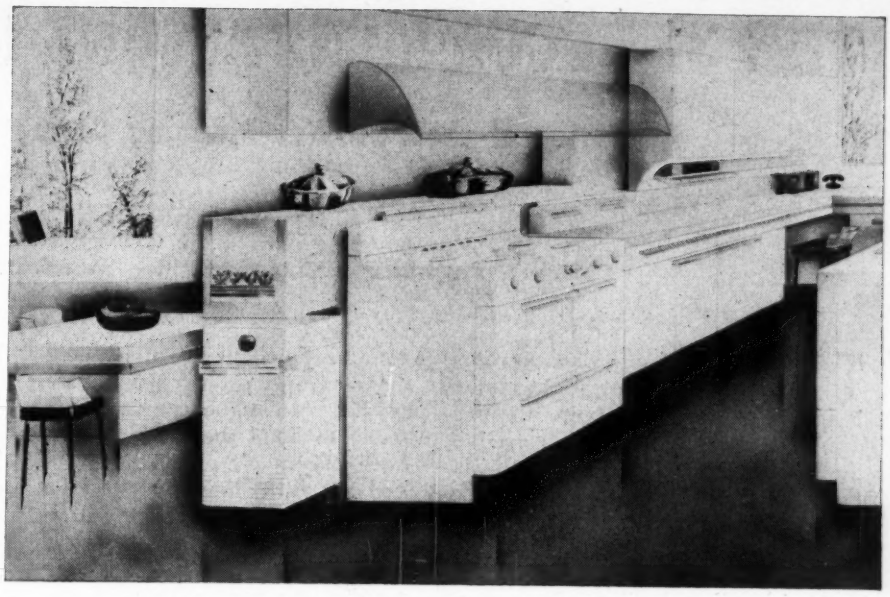
We need imagination in the industry, imagination enough to visualize a new device that will do for cooking what the Bendix has done for washing. If the electric industry beats us to the substitution of a cooking device for a cook, we may as well get ready to close up the manufactured gas industry. We must glamourize such a device, find a name for it that will make a woman think it is pert and smart. We need a saving in expense to talk about, but a bushel of savings for the housewife will not save the cooking load if we fail to prove to the women of America that cooking with gas is the way of release from drudgery and the only modern and glamorous way to prepare a meal.

To accomplish the results vital to our continued existence we need a strong central organization; an organization filled with men of sufficient caliber to plan and direct the dozens of programs yet to be perfected.

It will cost a lot more money than the industry is at present contributing to all its organizations, but it will be cheaper than spending money for blinders and anaesthetics.

These are only some of the problems facing the gas industry in a postwar period. They indicate that the job ahead cannot be approached with the same kind of thinking the industry has applied to the job behind. It is a tough and serious job and is no less than a fight for the very survival of the industry.

It is time to brush aside all the "Pollyannas," all the "can't-be-doners" and all the "this-is-the-way-to-doers." It is time to unite and do the job.



Artist E. D. Pellegrini's conception of the gas kitchen of tomorrow

A Peek at the Wonderful Kitchen of Tomorrow

By E. C. SORBY

Vice President, Geo. D. Roper Corporation

A KITCHEN is that necessary room in every American home around which that home revolves. Architecturally, it must be developed for utmost convenience. It must be well illuminated; it must be clean; it must save unnecessary labor in food preparation. There is no established hard-and-fast rule for kitchen design—its possibilities are that flexible.

A well-planned kitchen is one using gas for cooking, water heating, refrigeration, air-conditioning, and heating. A well-planned after-post-war kitchen may well have its own individual gas space heating; individual controlled gas roaster, dish washer, or controlled pressure cooker and many other convenient devices too numerous to mention. This might, at first thought, smack of revolutionary idealism. But it is not. These things are all possible and practical and can be placed in the American kitchen and in reach of the average American pocket-book if properly designed, properly developed and aggressively sold in sufficient volume.

The gas kitchen shown above, drawn for Geo. D. Roper by Artist E. D. Pellegrin, demonstrates the complete streamlining and tying together of all vital kitchen units. To some this kitchen may border on the fantistic side, but viewing it in the light of all practical aspects note the convenient arrangement of the kitchen cabinet grouping and the complete kitchen ventilating scheme embodied in the cabinet design, thus making possible complete kitchen ventilation which is not only essential but highly desirable in the removal of cooking odors, be it from gas, electricity, coal, wood or oil.

Observe the glass treatment and the complete ensemble of the breakfast nook, giving a complete view of the back of this home of tomorrow. Here is convenience reflecting true modernity, with major appliances such as the gas range and refrigerator being the end units, yet blending beautifully into the entire kitchen scheme. And this kitchen is just an example of the kitchen planning opportunities that are open to the gas industry.

This article and photograph are intended to impress the reader with the fact that plans are being made to bring about a better and higher standard of living than we have ever enjoyed before—as quickly as reconversion plans are completed, tools and dies are available, and industry is rolling into high gear (that conceivably can be several years away). City gas and liquefied petroleum gas will play a most important part in the comforts of your living—comes the peace. Excerpts from an address delivered by Mr. Sorby before the Indiana Gas Association annual meeting, Indianapolis, May, 15 and 16, 1944.

THE 31 RECOMMENDATIONS to the INDUSTRY

Discussion of the Post-War Planning Committee's Report No. 3

By A. M. BEEBEE

Chairman Postwar Planning Committee American Gas Association

THE objective of our Postwar Committee program, since its inception, has been to try to determine the conditions that will probably prevail in the postwar period and to mobilize the industry, so that it will be adequately prepared to meet those conditions.

At first, our activity was broken down into four basic studies, all of which would aid us in visualizing those conditions that will lie ahead. Thus far, the basic studies were as follows:

1. Determination of the purchasing power and potential markets in which we might be interested.
2. The competitive factors that will also be seeking those markets.
3. Our own ability to serve those markets.
4. The effects of national planning and trends.

Present estimates indicate a demand for about 8 million modern gas ranges to replace old equipment now in use. At least 650,000 ranges per year must be sold to the estimated new home market which replaces old structures, just to keep even. Five million automatic gas water heaters are needed to replace less satisfactory service methods, and there is a market for 2,000,000 gas refrigerators among existing customers.

In the new home market gas home heating will be widely accepted, and will carry with it a high percentage of other residential load. Adding gas air-conditioning which now permits all year climate control will greatly stimulate the acceptance of the 'all gas' home.

Spendable Income Shifts

In general, we have tried to visualize what will take place by reason of the great shift in spendable income which has taken place in this country. It appears that the classes that formerly had spendable funds no longer have them, and vice versa. The appliance saturation among those who now have spendable income is surprising low. Great shifts in population have taken place. Habits of our customers have been completely upset. When the soldier returns, further complications will arise and the dammed up customer demand certainly has created a reservoir that is ready to flood the market. Marriages have taken place by the wholesale and yet little home construction has been allowed. Therefore, it is evident that when the postwar period arrives, there will be a confusion of markets, as well as a wild scramble for equipment.

Furthermore, as a result of the great expansion that has taken place in all basic industry, and particularly in the electrical equipment industry, when the slow up in munitions work arrives, a real effort will be made by them to keep their present employees employed. This is as it should be. Some of the industries which have expanded to the greatest extent are interested in the manufacture of products which will challenge our basic markets. I do not need to be specific. These interests have tremendous advertising power and prolific sales outlets and merchandising power.

The electrical utility industry likewise has greatly expanded and we may be sure that this community of interest will result in formidable activity directed at our basic market in the kitchen.

It is apparent, therefore, that the gas industry must not be on the defensive in the kitchen.

It is apparent, therefore, that the gas industry must not be on the defensive in the kitchen.

There are indications that the American housewife has fallen for the electrical way of doing things. Numerous surveys show that this impression is more deep seated than we may like to admit. It also shows that this impression has been founded on what she has been led to believe rather than on experience. Numerous social planning agencies and Governmental programs have contributed to this thinking and will be a powerful influence to counteract.

"Blitz" Expected

Therefore, again it is easy to believe that we can expect a "blitz" on our basic market, the like of which we have never seen before.

The American public has learned during the war that proper care of an automobile will make it last a long time. This item in the past which has taken such a large slice of the spendable income of the American family may find a part of it going into an expansion of what I will call "Home Niceties," especially since such a large share of the potential home makers have for the last few

A. M. Beebee

THE OBJECTIVE of the Postwar Committee program is to provide the industry with information so that it can be adequately prepared to meet the postwar situation. Report No. 3 covers our Recommendations to the Industry in support of that objective.

These recommendations have had the endorsement of the General Postwar Committee, as well as the "Committee of Action," which latter group of executives has been appointed with the objective of seeing to it that their companies, in so far as possible, will support these Recommendations and will carry on certain missionary work in their particular region, to the end that our industry program will be a strong and effective one.

At first reading, these Recommendations may appear as a somewhat heterogeneous group of subjects, but if carefully analyzed and read between the lines, it will be found that there is much which ties together, that one recommendation supports another, and that when taken all together, they can be an answer to problems that will confront the industry in the postwar period.

Any such activity can be effective only if it has industry-wide support and it is in this direction that our Committtee particularly urges careful study of this Report, and, in so far as is possible, that each utility follow through in support of it.—A. M. Beebee.

THIRTY-ONE RECOMMENDATIONS

To the Gas Industry

In order for our industry to be prepared to meet the conditions that will be facing it in the postwar period, it is most important that:

No. 1. Each unit of the gas industry should not only study but be prepared to support the recommendations of the American Gas Association Post-War Committee.

No. 2. Each utility should study and be prepared to assume its share of local responsibility in the post-war employment situation.

No. 3. Each utility should support the national advertising program of the American Gas Association and lay plans to still further broaden its effectiveness.

No. 4. Each utility should engage competent publicity direction, so as to encourage and shape public opinion in their own area to accept gas as the modern fuel in the home.

No. 5. Advertising must concentrate on the use of gas in the kitchen.

No. 6. Our industry should fully understand and appreciate the reasons why a modern gas range as a cooking appliance provides a service to the customers that is unexcelled.

No. 7. Modern homes of the future will require elimination of cooking odors irrespective of the fuel used. We should encourage this trend, since we have an opportunity to do it in a way that will broaden our market.

No. 8. Support should be given to the recently announced co-ordinated gas kitchen equipment program.

No. 9. The use of electricity in the modern kitchen should be encouraged for those uses for which it is particularly suited—such as lighting and power.

No. 10. The use of gas in the domestic water heating and refrigeration markets should be aggressively pursued with renewed zeal.

No. 11. Each utility should study the potentialities in the house heating and "Year-Around Air Conditioning" fields by first-hand practical experience.

No. 12. Each utility should realize the importance to the industry of preserving and agressively developing the commercial and industrial loads.

No. 13. Utilities should study their rate structures to be sure that rates are properly designed to secure loads that can be economically served.

No. 14. Basic programs of research should be adopted and research programs should be coordinated.

No. 15. We should support both the American Gas Association Laboratories and the Institute of Gas Technology.

No. 16. The manufacturers of gas appliances should keep in constant touch with the interesting developments of the research activity of the A.G.A. Laboratory, to the end that gas appliances reflecting these research results be made available at the earliest moments.

No. 17. Sales, appliance development, and promotional activities of the industry should be coordinated both by the utilities and manufacturers.

No. 18. Needless special appliance requirements of individual companies should be eliminated in order to reduce manufacturing expense.

No. 19. Unnecessary multiplicity of models should be avoided so as to lower manufacturing costs of appliances.

No. 20. Encouragement should be given manufacturers to advertise and carry on research.

No. 21. Each operating gas utility should assume leadership in merchandising in its area, whether it merchandises directly or through dealers or a combination of both.

No. 22. An adequate sales force, properly selected, and properly trained will be needed to fully realize on the potential market for gas.

No. 23. Service programs of utilities should consider and support dealer activity.

No. 24. Utilities should consider giving "back log" orders to manufacturers to help them to prepare for the conversion period.

No. 25. Utilities should contact their manufacturers to encourage their cooperation in the American Gas Association post-war recommendations.

No. 26. Our industry and the public should be informed of the fact that the combination service of gas and electricity in the home of to-morrow has a definite interest to the consumer and our national economy.

No. 27. The coal and manufactured gas industry should realize and develop their community of interest.

No. 28. Our industry should consider cooperation with the liquefied petroleum gas industry, particularly in serving "fringe territory."

No. 29. We should support all sound home insulation programs.

No. 30. Regional associations and American Gas Association committees and sections should plan their activities in support of post-war recommendations.

No. 31. Each company should realize that it can be helpful in support of this program.

years been living in foxholes, jungles and cooped-up apartments and other conditions that cannot help but accentuate the desire for a "home" with all that the name implies.

We must bear in mind that over three-quarters of the energy used in a home (exclusive of house heating) is used in cooking and water heating, which fact will be looked on with longing eyes by an overly expanded electric industry.

Point of Attack

We must also remember that rate structures (both gas and electric) are designed so that added uses involve lower costs for the added load. The focal point in the domestic load is the range, which has a very poor load factor and if this were the only load involved, we would not have much to worry about, since fundamentals are such that we can more economically serve such poor load factor loads.

However this load is the foundation upon which sound and profitable increments of business (either of gas or electricity) can be built to the advantage of the customer and the industry. And, the electric industry recognizes that the electric range is the wedge by which the whole economic structure of the gas industry can be destroyed. It is true that the electric industry is aware that once having secured the cooking load away from gas (the beach-head so to speak) it must immediately gain other loads, such as off-peak water heating to restore its economic earnings. All of which emphasizes the focal importance of the gas cooking load and its immediate coordination with other domestic gas uses.

Therefore, again it does not take much of a soothsayer to see that the focal point of attack in the "blitz" will be on the range.

I mention all this because it will help to visualize the reasons back of some of our most interesting postwar committee activities and the "WHY" of our program.

After having visualized as best we can the conditions that lie ahead, the next program of our Post-War Planning Committee has been to try to mobilize the industry to meet these conditions.

With that in mind, a set of Recommendations has been drawn up which we hope will constitute a rallying ground on which the entire industry can become mobilized.

These recommendations to the industry can be effective only if they are supported by the industry. With that in mind, a "Committee of Action" has been appointed whose objective will be to encourage industry wide support of these recommendations. This committee consists of the leading executives in various sections of the country, who can set an example in their respective sections by seeing to it that in so far as possible their companies will support the postwar committee recommendations. Furthermore, these committee members will carry on certain missionary work in their sections to the end that our industry program will be a strong and effective one by assuming industry wide support.

Careful reading of the discussion of these recommendations will reveal that they have been designed to fill the needs of the postwar period in a great variety of related subjects and if carried out should be a complete answer to the problems before us.

An Inter-Industry committee has been formed to consider problems in connection with trade relation sales practices in the postwar period. At present, the American Gas Association, Edison Electric Institute, and the National Furniture Association are represented; this will be extended to include the National Retail Hardware Association and others.

In line with this thinking is the suggestion made by the Post-War Planning Committee of the promotion of both gas and electricity in the home of tomorrow.

There is room for both services. Gas and electricity are complementary to each other for our customers and the industry. We must bear this in mind otherwise an inflationary, wasteful and needless market battle will ensue.

Recommendations to this effect emphasize that "the use of electricity in the modern kitchen should be encouraged for those uses for which it is particularly suited, such as lighting and power, dishwashers and accessory equipment which uses electricity, but which will also broaden the use of gas. A case in point is the need of adequate lighting in the package all-gas kitchen in which cabinets, sink, range, refrigerator, dishwasher and water heater will be coordinated in design and properly sized to fit one with the other.

Cooperation Suggested

Both the gas and electric industries are recognizing that there are definite fields wherein each service is complementary or best, and that the combination of services can be to the interest of both the consumer and the utility. But, that a combination of the two services can enable a higher standard of living has not yet been appreciated by the American public.

In drawing up these recommendations, I have been amazed at the unanimity of the support that they have received by both the Post-War Planning Committee and the "Committee of Action." No such objective could be undertaken without being confronted with differences of opinion. However, it has been a tribute to our industry to see the attitude of compromise for the common good that these various committees have adopted in drawing up these recommendations. I am glad to be able to say that these recommendations have been drawn and are offered to the industry with no "sore spots" that we know about. With such splendid support to these recommendations, if they are backed up now by a united industry, there is much that can be achieved.

Approval Standards Now Cover High Altitudes

Four requirements subcommittees met at the American Gas Association Testing Laboratories in Cleveland during the week of April 9, to initiate action toward adoption of approval standards for appliances operating at high altitudes. Meetings of the water heater, space heater, domestic gas range and central heating groups took place.

Suggested additions to present approval requirements for these various appliances to insure their satisfactory action at altitudes up to 5200 ft. were reviewed and adopted. These new provisions are being submitted to the entire industry for review and criticism. Their application will still further improve the service rendered by gas appliances to many customers living in high altitude areas.

Action of these groups climaxes many years of study of performance of gas appliances at high elevations. It followed extensive tests by the Laboratories at the Pacific Coast Branch and at Lake Arrowhead as well as at the National Bureau of Standards.

Under the requirements adopted, performance tests will be conducted under conditions simulating high altitude rather than by actual use of special high altitude chambers.

ECONOMICS of SALES of MANUFACTURED GAS

A Summary of the Post-War Planning Committee's Report No. 4

THIS report constitutes a study of certain elements which go to determine the "Economics of Sales." The Committee, in submitting this report realizes full well the limitations and hazards involved in a determination of the "Economics of Sales." At the outset it wishes to stress the fact that *each company must in the final analysis make its own findings.* The report will, however, afford much data that can be used in a comparative manner and will provide a basis for local consideration of factors influencing the "Economics of Sales."

The report comprises six major elements in the "Economics of Sales" and mentions a seventh which has been reported previously by this Committee, namely "Market Studies."

The seven factors involved are:

(1) Market Studies.

(2) Evaluating New Business Efforts.

(3) Revenue Life of Apliances.

(4) Study of Salesman Power—Domestic and Heating.

(5) Minimum New Business Expense to Hold Revenues.

(6) Effects of Home Service on Revenues.

(7) Study of Agressive vs. Passive New Business Efforts.

SUMMARY OF FINDINGS AND CONCLUSIONS

Market Studies:

The Committee in 1942 reported on a method for making a market survey. It now reiterates its belief that no economical sales program can be carried on without a market study. It, therefore, considers this a No. 1 must. Such studies can be made for less than 10c (some have been made for as little as 2c) per customer, which is much less than 10% of the amount spent in normal times per year per customer on new business. This seems a small sum for proper orientation of new business efforts.

Evaluating New Business Efforts:

1. *Annual Mcf Sales and Revenues per Appliance Unit:*

One of the problems in evaluating new business efforts consists of a determination of the amount of Mcf sales and revenue an appliance may be expected to produce in a year. The committee's investigations show that appliance usage will vary as between sections of the country and companies in same section. Hence each company must make its own determination of appliance usage. The following figures show gas usage and revenue as found by a New England company.

	Annual Usage M.c.f.	*Revenue*
Range (Replacement)	*1.5**	*$ 1.72**
Tank Water Heater	12.0	13.80
Automatically Controlled Water Heater	30.0	23.18
Refrigerator	19.0	19.50
Kitchen Heater	66.9	36.72
House Heater	302.1	152.45

*Italics denote decrease

II. *Number of Appliance Unit Sales Needed to Produce a Given Increase in Sales and Revenues:*

A knowledge of the number of appliance units that a company would have to sell to obtain a certain increase in gas usage is of great importance in laying plans for new business operations. It is also highly desirable to know which type of appliance will bring in the largest sales and revenues. Charts have been prepared which will show what percent of its customers a company would need to sell different appliance units to obtain various increases in sales and revenue per customer per year. The following data are from these charts:

The Post-War Planning Committee's Report No. 4 is the first release of the Post-War Planning Subcommittee on Engineering and Economic Phases of our Industry. Hall M. Henry, chairman, covering the subject of "Economics of Sales of Manufactured Gas."

This report was prepared by the 1943 Market & Economic Research Committee, Hall M. Henry also chairman, a standing committee of the Residential Gas Section.

At the request of the Post-War Planning Committee, the 1944 Market & Economic Research Committee of the Residential Gas Section is preparing a similar report covering "Economics of Sales of Natural Gas."

The Post-War Planning Committee commends this report and the one to follow to the careful review and study of member gas companies as a guide to the formation of their decisions and policies on sales matters.

To obtain an increase of 1000 cu. ft. per customer per year requires the sale of the following quantities of the particular appliance given

	Units per 1000 Customers	*% of Customers to be Sold*
Tank Water Heaters	85	8.5
Automatically Controlled Water Heaters	33	3.3
Refrigerators	53	5.3
Kitchen Heaters	15	1.5
House Heaters	3.3	0.33

This table shows that it takes the sale of 85 tank heaters per 1000 customers or 8.5% to bring about an increase of 1000 cu. ft. of gas per customer per year whereas the sale of 3.3 house heaters will produce the same increase. Hence 26 times as many tank heaters must be sold to give the same results as the sale of house heaters.

To obtain an increase of $1.00 in Gross Revenue per customer per year requires the sale of the following quantities of the particular appliance given

	Units per 1000 Customers	*% of Customers to be Sold*
Tank Water Heater	73	7.3%
Automatically Controlled Water Heater	43	4.3
Refrigerator	51	5.1
Kitchen Heaters	28	2.8
House Heaters	7	0.7

This table illustrates the effect of the gas rate on the number of units to increase revenues. We see that only 10 times as many tank heaters must be sold to equal the value of one house heater in revenue but that 26 times as many were needed to equal a house heater in Mcf sales value.

The data only applies for the company studied and for conditions which may be similar in other companies.

III. *Method for Evaluating New Business Results:*

The committees' studies show that the operating report is unreliable as the only measure of the new business results. A method is suggested which should prove to be more reliable in evaluating new business. Examples of this method and its comparison with actual operating results is given. A study of these exhibits help relieve the misunderstanding as to what can be expected from new business.

Revenue Life of Appliances:

This study made on house heating, refrigerators and water heaters shows for the first time the *number of years* that these appliances may be expected to produce revenue. The significant findings may be summarized as follows:

(1) Taking all sales installed from 1925 to 1942: The report shows the following percentage of *total sales* still on the lines and being used:

	Company A	*Company B*	*Company C*
Heating	90.7%	77.1%	70.2%
Automatic Water Heaters	87.5		
Refrigerators	90.3		

(2) Taking *all* units sold in period between 1925 and 1930 and determining how long each has remained in use through 1942 and weighting the year's use and dividing by *total* sales, the following "year's revenue life" and "percentages still in use" figures were developed:

	No. Year's Usage To Date per Unit Sold	*% Still In Use—1942*
Company A		
House Heaters	12.6 years use with	67.6% in use
Automatic Water Heaters	12.08 years use with	52.9% in use
Refrigerators	11.27 years use with	59.7% in use
Company B		
House Heaters	13.96 years use with	69.6% in use
Company C		
House Heaters	11.35 years use with	47.2% in use

(3) A company can safely plan on a *minimum* "revenue life" of 10 years —for house heating—automatic water heaters and refrigerators—for *each job sold.*

Salesman Power:

This study on salesman power shows:

(1) The estimated annual revenue gains are in direct proportion to salesman power. *Doubling* salesman power *doubled* the estimated annual revenue obtained.

(2) The *fewer* customers per salesman the *larger* the estimated annual revenue obtained per customer.*

(3) The *best results* are being obtained with *fewer than* 2000 *meters* for domestic salesmen and the same per house heating salesmen.

(4) The *fewer* the meters per salesman the *lower* the *new business* expense per *dollar* of estimated annual revenue.

(5) *Sales results* can be budgeted in terms of salesman power and the actual results will bear the same relation to budgeted sales that actual salesman power bears to budgeted salesman power.

(6) *The estimated annual revenue* obtained per *salesman year* is about the *same* whether the salesman has 1500 customers or 8000.

Other pertinent data are given on minimum, average and maximum units sold per salesman year, compensation—E.A.R. per salesman—E.A.R. per meter—customers per salesman, new business costs per dollar E.A.R., etc.

Here again are data that can be used in a comparative way but much of it should be determined for the local situation.

Minimum New Business Expense to Hold Revenues:

In this study the committee has provided data which throws some light on the question as to how much of so-called new business expense is legitimately chargeable to holding revenues and how much to adding new revenues. The committee's studies lead to the conclusion *that at least ONE DOLLAR PER YEAR PER CUSTOMER IS REQUIRED TO HOLD REVENUES.* The committee realizes that where a large number of customers are served in a concentrated area that a dollar may be too much to charge against holding revenues.

However, regardless of what this minimum new business expense is, there is a so-called necessary minimum new business expense that each and every company should consider as being spent to *try to maintain revenues* not to increase them. Hence, only that expense which is in *excess* of this minimum should be considered as being spent to *acquire* new revenues. It is this *excess above the minimum* that the new business manager should be *held accountable for* and should be used to evaluate the *economy of obtaining new revenues.*

Effects of Home Service on Revenues:

The committee has found it exceedingly difficult to evaluate the effects of home service on revenues. It has, however, been fortunate in securing reports on the evaluation of home service from several different companies. The conclusions are:

(1) Home service can be evaluated in terms of added revenue.

(2) In all of the case histories reported the revenue of customers contacted by a home service representative was greater after contact than before and home service contacted customers showed a larger gain or smaller loss when the latter was occurring than *non*-contacted customers.

(3) The cost per dollar of revenue added through home service compares favorably with similar costs for revenue added through domestic appliance selling.

Effects of Aggressive New Business vs. Passive:

This study was made covering a period of several years to see whether aggressive new business action vs. passive was reflected in the gross and net earnings of the companies.

Conclusions:

(1) Aggressive new business action is reflected in
(a) Larger Gross Revenues
(b) Larger Net Earnings

The committee wishes to re-emphasize the importance of companies preparing similar studies on their own situation. It will be glad to receive copies of such studies and to offer any help and advice of which it is capable.

*Naturally there is a limit to how far a company may go in reducing the number of customers assigned to a salesman. What this economic limit is must be determined by each individual company.

Furnace Noise; Primary Air Bulletins Released

THE first research bulletin to be published by the American Gas Association Testing Laboratories on Central Gas Space Heating Research has been issued as one of two new bulletins recently released to the gas industry. This project is now in progress under the supervision of the Committee on Domestic Gas Research.

Known as Research Bulletin No. 25 and entitled "A Study of Fundamentals of Resonant Noise In Gas Furnaces," the new publication presents a comprehensive analysis of the factors responsible for such noise. It also includes specific recommendations for elimination of noise.

Research Bulletin No. 26, "Primary Air Injection Characteristics of Atmospheric Gas Burners," is another Laboratories publication just released. It sets forth a new empirical relationship for calculation of primary air entrainment from the dimensions of the burner, composition of the fuel gas employed and gas pressure. The treatise forms the sixth of a series of research publications which have gradually translated the technique of burner design, once largely "rule of thumb," into fundamental or empirical relationships. It reviews and correlates much of the material formerly presented in earlier publications.

THE UPWARD TREND of U.S. GAS RESOURCES

By LYON F. TERRY
Second Vice President
The Chase National Bank, New York, N. Y.

THE known reserves of natural gas in the United States are currently estimated by the Petroleum Administration for War to aggregate 110 trillion cu. ft. Total production of natural gas reached a record high in 1943 of approximately 4 trillion cu. ft. of which some 3.3 trillion were marketed. Thus our known reserves are equivalent to 27.5 times annual withdrawals on a wartime basis or about 33 times annual requirements for the prewar period.

While the figures for additions to reserves should be considered as only relative, being based upon rough estimates of national reserves at successive intervals, the following trends may be observed:

(a) For the period 1926-34, which included the development of the Panhandle field and the discovery of Kettleman Hills and Hugoton, the rate of discovery and development of new gas reserves averaged 6.82 trillion cu. ft. per year, or approximately 2¾ times the rate of withdrawals.

(b) During the 1935-43 period, including the discovery and development of important deep gas reservoirs in the Gulf Coast and Rio Vista in California, additions to reserves averaged 6.28 trillion cu. ft. per year, or approximately twice the rate of production.

On the basis of an assumption that future discoveries of natural gas will at least be equal to total discoveries to date, the total potential resources of natural gas in the United States may be stated in round numbers as composed of known reserves in excess of 100 trillion cu. ft. and assumed future discoveries of at least 200 trillion, or a total of 300 trillion cu. ft. or more.

Excerpts from an address, "Our Natural Gas Resources," presented before the Natural Gas Spring Conference, French Lick, Ind., May 11-13, 1944.

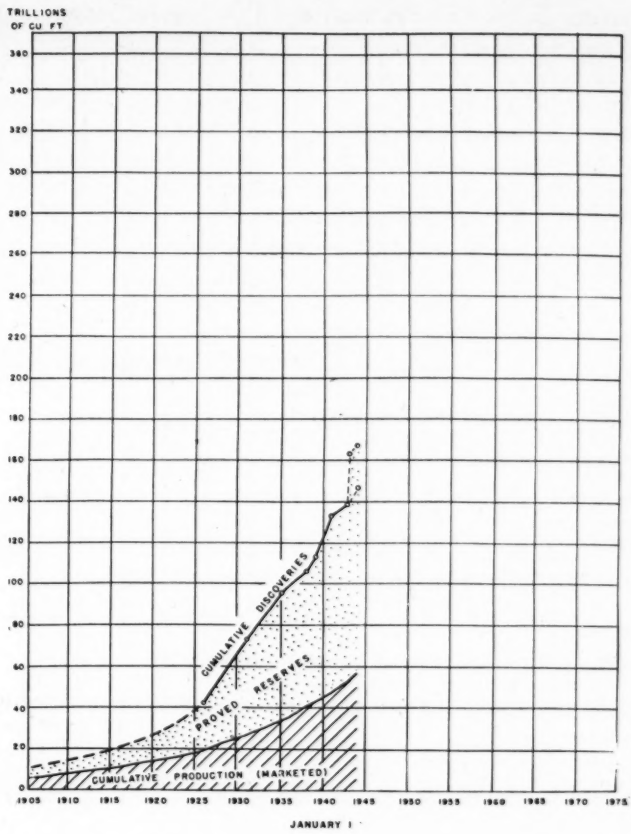


FIG. 1
Growth of natural gas discoveries and reserves in the United States.

Hence for a number of years new gas reserves have been discovered and developed in quantities greater than withdrawals from the fields, which has resulted in the building up of a substantial backlog of available reserves.

Discovery Prospects With Deeper Drilling:—Reported studies of changes in the nature of oil and gas with depth of the reservoir rocks offer no suggestion that gas will be less abundant or that the ratio of gas to oil will decrease with deeper drilling. The variation in the characteristics of oil with increasing depth and geologic age has been investigated for the Gulf Coast area to a depth of 7000 ft. by Barton.[1] In general he found:

"(a) increase in the percentage content of the lower boiling (lighter) fractions and decrease in the percentage content of the higher boiling (heavier) fractions with increasing depth and age; (b) increase of the A.P.I. (Beaume) gravity decrease of the specific gravity of all fractions of the crude oil with increasing depth and age; . . . "

While he stated no definite conclusions as to natural gas itself his findings may justify the expectation that exploration at greater depths will reveal increasing proportions of condensate and of solution gas, compared with crude oil.[2]

There is evidence also that with deeper exploration the proportion of natural gas as to crude oil discovered has been decreasing. A notable increase in the discovery and development of condensate fields has occurred in recent years, particularly in the deeper developments of the Gulf Coast. This is well indicated by the results of exploration in the Gulf coastal area where the number of gas and condensate discoveries out of total successful wildcat completions increased from 7% in 1933 and 24% in 1934 to 52% for 1943.

Future Discoveries: While there is no way of foreseeing with any accuracy what future explorations may reveal, the problem may be approached along the following line of reasoning. Extensive studies have been made by qualified geologists, of the proportion of marine sedimentary lands already tested to the prospective areas still available for further exploration, and of the finding experience for the portions of such lands found productive to date. The investigations indicate that the total acreage in this country which may be expected to be ultimately productive, about one half has been proven for oil to the present time. As described by Pratt[3] and others the results of these studies point to the probability that additional reserves of oil will be found in this

[1]Donald C. Barton, "Evolution of Gulf Coast Crude Oil," A.A.P.G. (1937), Vol. 21, pp. 914-46.

[2]See also Wallace E. Pratt, vice president, Standard Oil Co. (N. J.), "Hydrogenation and the Origin of Oil," Problems of Petroleum Geology, A.A.P.G. (1934), pp. 235-45.

[3]Wallace E. Pratt, in recently published statements, particularly an address before the Oil Heat Institute of America, New York, March 13, 1944.

country in quantities at least equal to total past discoveries.

In general, the discovery of gas has run parallel to that of oil, and naturally so, since these hydrocarbons originate from the same sources and are found in similar and coincident reservoirs and sedimentary rocks. Considering also, in the case of gas, the effects of the compressibility of gas under reservoir pressures found at increasing depths, the significance of the variation in the character of oil to be revealed by deeper drilling, and the recent trend toward the discovery of an increasing proportion of gas fields compared to oil fields, there appears to be all the more reason to conclude that natural gas reserves to be discovered in the future will at least equal, and may exceed, the 200 trillion cu. ft. discovered to date.

Referring to Fig. 1 it may be observed that fulfillment of this forecast requires that the graph of "cumulative discoveries will ultimately reach the 370 trillion ordinate at the top of the chart. Judging from the slope and proportions of the curve, this goal would seem to be within the range of possibilities.

The Significance of Natural Gas Cycling

CONCERN has been expressed by representatives of the natural gas industry as to the probable demands which may be placed upon natural gas for use as a raw material in the rapidly developing Petro-Chem industry and for the production of synthetic gasoline.

It is true, as frequently stated in connection with predictions of future availability of crude oil, that our natural gas reserves could provide the source for substantial quantities of synthetic gasoline. This synthesis involves (a) reforming by steam conversion to water gas, (b) Fischer-Tropsch synthesis into liquid hydrocarbon fractions, and (c) recovery and separation, each of which is now being practiced separately on a commercial scale.

A pilot plant now under construction will combine the three operations and is expected to yield a barrel of liquid hydrocarbon mixture (chiefly gasoline, with some diesel and heavy oil) from 10,000 cu. ft. of dry natural gas, including fuel for the process. While extremely interesting, it seems likely that the economic success of commercialization of this process will depend either upon much higher prices for its products than now obtain, or upon securing its raw material at distress prices. The first condition would be attendant upon an actual severe shortage of crude oil; the second would relegate the operation to locations remote from pipeline outlet and where perhaps gas would otherwise be wasted. It seems most probable that crude oil will continue to bear this load for a good many years in the future.

As to other chemical uses, the oxidation, chlorination, and vapor phase nitration of natural gas are of proved commercial importance, with the last-named process making available for chemical synthesis a group of compounds with a range of potential usefulness unequalled by any other similar group of organic chemicals. As for the dry natural gas, although it is a wholly suitable chemical raw material, especially in the steam conversion process, less compulsive needs for it now exist. Present trends suggest that the heavier fractions, available at cycling plants in appreciable quantities, are more desirable for chemical processing. This condition has the desirable effect of tending to create a balanced market at cycling plants and make the dry gas available to the gas industry at once in some measure and at a later date to the full extent of the reserves.

Thus it may be seen that this sturdy young offspring of the oil and gas industry, with an investment of $40,000,000 in plants alone and an annual gross in excess of $25,000,000 exclusive of revenue from dry gas sales, is not only doing an important war job, but promises to fit as well into the technologic pattern of peacetime years to follow.

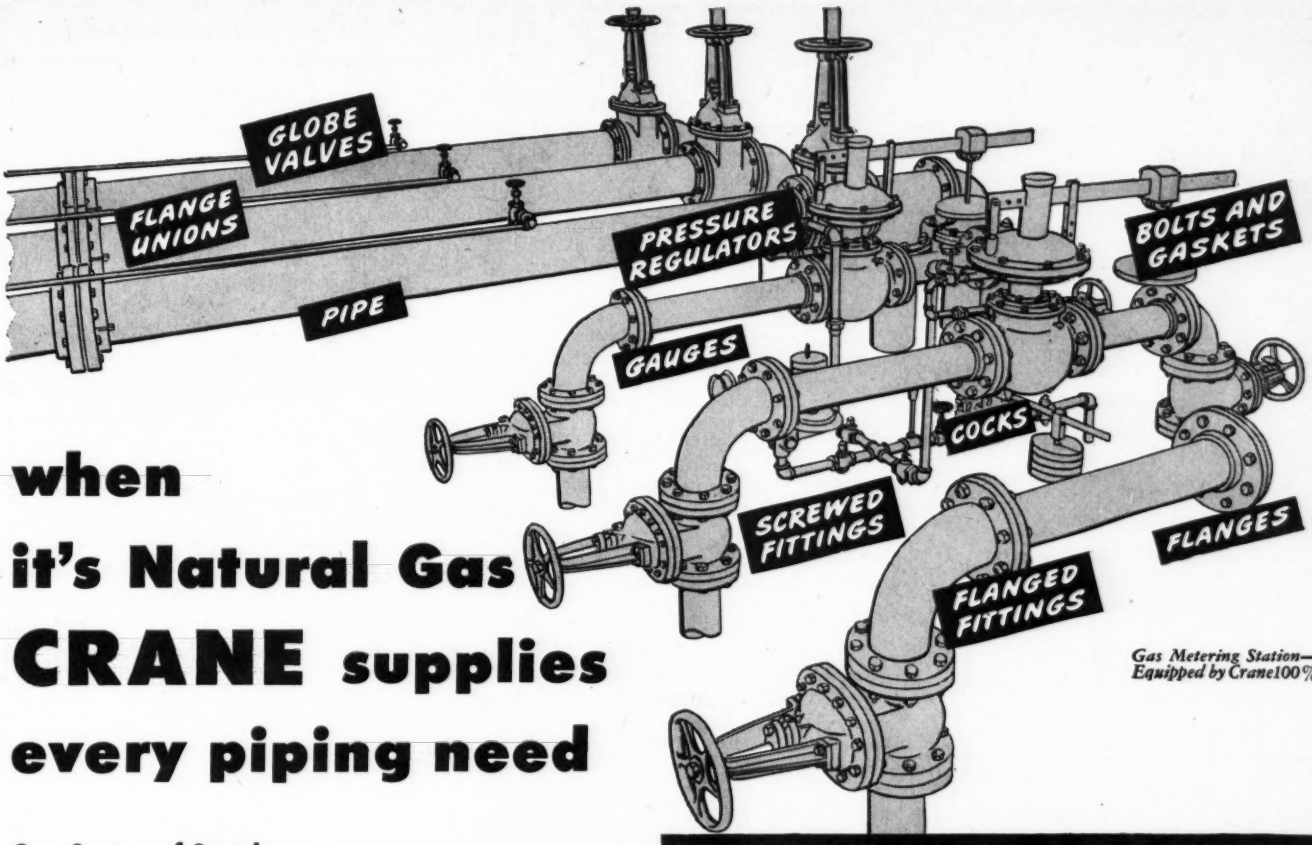
Any attempt to evaluate the significance to the natural gas industry of gas cycling should start with the common denominator of the business, gas reserves, and the figures are not unimpressive. Back of the 39 cycling plants now operating and under construction are gas reserves estimated to total no less than 22 trillion cu. ft., fully 20% of the estimated proved natural gas reserves of the country.

EXCERPTS FROM a paper, "Natural Gas Cycling and its Significance to the Natural Gas Industry," by Robert W. Ducker, assistant director, and Dr. Frank H. Dotterweich, consultant, Natural Gas and Natural Gasoline Division, Petroleum Administration for War. Presented before the Natural Gas Section, AGA, French Lick, Ind., May 11, 1944.

Assuredly, it would be in error to assume that but for the development of gas cycling this vast quantity of natural gas should have been dissipated. On the other hand, it is equally fallacious to assume that pipeline sales, currently approximating 1% of total reserves per year, could have satisfied individual producers and induced them to voluntarily forego ready income from condensate production for the uncertainties of future, perhaps long in the future, revenues from the sale of gas. Certainly state regulations would have prevented the dissipation of gas from some of these fields. Not because they recognize gas-condensate fields as such, but rather because gas-oil ratios are so high as to classify them as gas fields. Others could, under current practices, qualify for an "oil" allowable and be produced as such. The more progressive state regulatory bodies are now cognizant of the necessity for unit developments and operation of these fields, and it is therefore probable that future regulations will deny the individual operator the right to dissipate gas and render irrecoverable large reserves of condensate.

Since many of these fields can deliver controlled quantities of gas during cycling operations without detriment to the ultimate recovery of liquefiables, they offer a splendid source of high pressure gas for winter peaks without the compulsion to continue taking substantial quantities throughout the year in order to satisfy the requirements of royalty and working interests. They have the further advantage of making all of the gas available at a central point, under a single contract.

Several natural gas utilities companies are now actively interested in cycling, and other farsighted company managements could do well to consider seriously the acquisition of acreage interests in likely cycling prospects, thus lending their encouragement to the establishment and initiation of a prudent cycling program, while at the same time assuring themselves a seat on either side of the table when time comes for negotiation of the sale of the remaining residue dry gas reserve. Certainly no other single development in the history of oil and gas production has promised any greater contribution to true conservation of our resources of natural gas and allied liquefiables.



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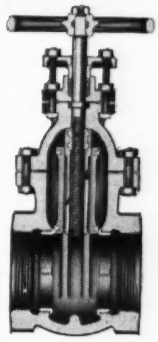

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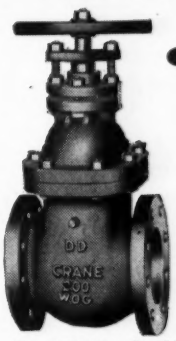
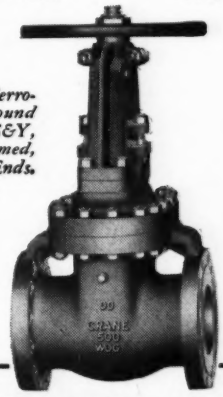


No. 481 Standard Iron Body Class, Non-Rising Stem, Brass Trimmed, Flanged Ends.



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THE OPEN HEARTHS

Bigger than 8-room house, a modern open hearth steel furnace, enclosed in silica brick, produces 150 to 200 tons of molten steel every 10 to 12 hours. The furnace is first charged with limestone, then scrap iron, eventually pig iron or molten iron, and other ingredients. For hours the "bath" melts, bubbling and boiling at temperatures up to 3,000°F., is worked, watched and tested by skilled crews, vigilant to maintain control of quality.

Samples of the steel bath are taken at intervals and laboratory tested to make sure analysis of the steel is correct for the job it is to perform—perhaps on a far away battle front. Experienced open-hearth melters and helpers, by merely looking at a fractured steel sample, can judge carbon content to within 2/100 of 1%. In this they are now assisted by a magnetic device in a small box which reveals carbon content on a dial. This is the "Carbanalyzer," a J&L invention.

Through tap hole in rear wall the "heat" of molten metal is drawn off into great ladles in pits below. As these are filled, protectively garbed skilled workmen on the tapping platforms amidst heat and sparks, throw in measured quantities of manganese, silicon and other final modifying ingredients (see illustration) to obtain exact analysis of steel desired.

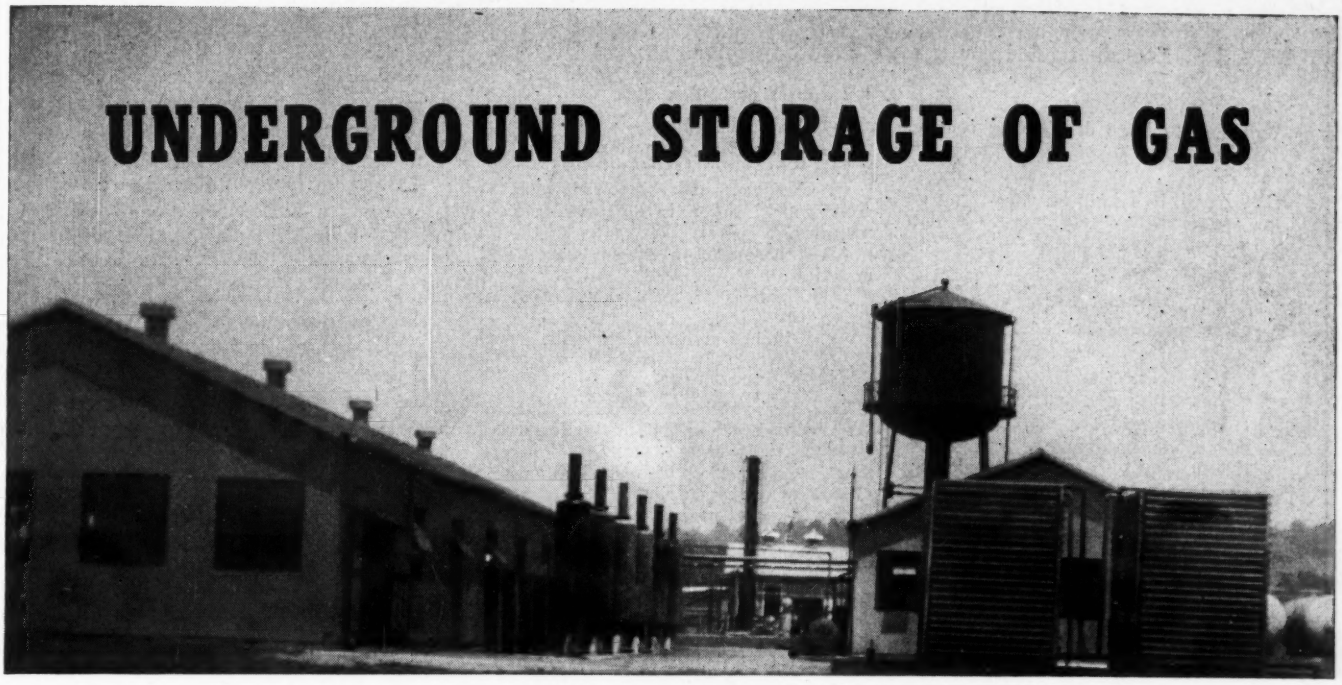
Wispy vapors tinted lavender, chartreuse, pink, blue, yellow, arise as the fiery stream of steel gurgles and splashes until ladle is full, and steel sparks shower about, popping and bouncing as they hit the ground. Overhead crane now picks up the sputtering brimful ladle and bears it away to fill the rows of ingot molds standing close by on low-built buggies (small flatcars).

Greatest steel producers of all time, open hearth furnaces, from which streamed last year in the U. S. 78,625,857 tons of steel ingots, were invented by Charles William Siemens, of Hanover, Germany, who became citizen of England to obtain protection of its patent laws. He patented his furnace in 1861 and perfected it in 1867, a dozen years after Henry Bessemer's process had revolutionized steel making.

Two brothers in France, Emil and Pierre Martin, experimenting in the 60's to further improve steel-making methods, utilized a Siemens furnace to produce steel by melting scrap iron in bath of molten pig iron. This became known as the Siemens-Martin process; is substantially the process used today.

A Cleveland ironmaster, Charles A. Otis, founder of Otis Steel Co., in association with Samuel F. Wellman, engineer, of New York, in 1873 built first complete steel works in U. S. planned exclusively for production of steel by the acid open hearth process. In 1880 Wellman built for Otis first basic open hearth steel furnace in U. S. (Basic differs from acid process.) Otis Works, Cleveland is now one of Jones & Laughlin's big steel plants—others are in Pittsburgh and Aliquippa, Pa.

UNDERGROUND STORAGE OF GAS



View of Chippewa Repressuring Station, a part of East Ohio Gas Co.'s underground storage system.

By J. FRENCH ROBINSON

President,
The East Ohio Gas Co.,
Cleveland, Ohio*

ALTHOUGH underground storage of natural gas has been practiced for more than 25 years, it has only been in the past few years that underground storage has been developed into its present and fast increasing usefulness. The demands for gas for civilian use and for war industries have increased by leaps and bounds all over the United States, and in many cases the available gas supplies have not been sufficient to meet these demands. In some instances curtailment in delivery has resulted.

This situation is particularly critical in the vital industrial areas centering in Cleveland, Pittsburgh and Wheeling. These communities, for the most part, obtain their gas supply from the Appalachian gas producing area where gas is produced from many horizons, varying in geologic age from the early Pennsylvanian to the Silurian. The natural gas reserves of this region are about 6% of the total reserves in the United States, but the users supplied from it consume about 16% of all the natural gas sold in the United States. The discrepancy between these two figures tells its own story.

The Appalachian fields are fighting a losing battle against depletion, and, because of it, and in order to maintain deliveries and service, many of the operating gas companies dependent upon Appalachian supplies, have long since found it necessary to establish underground storage areas for seasonal reserves. Their development and extension are accelerating.

Another factor which has hastened the development of underground storage has been the rapid growth of long distance pipelines. Economy dictates that these lines be operated at full capacity at all times. It has therefore been necessary to provide underground storage in which to accumulate surplus gas from the pipelines during periods of low demand.

Fifty or more natural gas storage areas are to be found in the United States and Canada. Many of them are located in the Appalachian area; others are in the mid-continent region, in the Pacific Coast area and Canada. These areas vary in size from a few acres to several thousand, and may contain from one billion to many billion cu. ft.

Underground storage areas are usually filled during off-peak periods by one or more of the following practices:

1. Withdrawing gas from highly competitive areas;

2. Continuously taking gas from a large number of small low-output wells that cannot be turned on and off economically to meet changing demands;

3. Using the surplus capacity of long distance pipelines.

Selection and Location: Factors to be considered when selecting and locating an underground storage operation are listed in Table 1.

It is important that all of the acreage and wells in an underground storage area be owned or controlled by one operator, or by a single group of operators, so that the entire area can be operated as a unit. If this principle is carried out, no cross-operating is developed and no gas is lost during the storage process.

In a properly selected storage area, there should be no loss of gas during the storage process, whether by migration to uncontrollod areas, or by withdrawals from uncontrolled wells. This can be checked by comparing the amount of gas that must be injected into the area to raise the rock pressures a given amount with the amount of gas that must be withdrawn from the area to reduce the rock pressure the same amount. If the quantity withdrawn is equal to the quantity injected, there has been no loss during storage.

If the selected storage area is near both high pressure (say 500 lb. psi. and over) and medium pressure (say 100 lb. psi. and under) pipe lines, the area can be filled from the higher pressure line and emptied into the lower pressure line without the use of a compressor station. The practical pressure differential depends upon operating factors.

*Excerpts from an article first published in the February 1944 issue of "West Virginia Engineer."

TABLE 1. Factors in Selecting and Locating Underground Storage.

1. Location.

Adjacent to large distributing centers.

2. Size.

(a) Small, if it is to be used for peak hour and peak day demands; with high rock pressures so that large volumes can be withdrawn in a short time.

(b) Large, if it is to balance out a system or to balance out the load factor on a long distance pipe line.

3. Type of Reservoir—Size of Wells.

(a) Porosity of gas bearing stratum.
(b) Its permeability.
(c) Freedom from water.
(d) Structural features, including faults, etc.
(e) Control of wells and acreage by the operating company.
(f) Storage rights.

4. Compressor Station Site.

(a) Available land.
(b) Accessibility to water.
(c) Proximity to storage area or areas.
(d) Nuisance risks involved such as noise and vibration in neighboring communities.
(e) Transportation of employees and materials.
(f) Nearness to main distribution or trunk pipe lines.
(g) Number of operating wells.

5. Legal.

The legal aspects and ramifications of the rights covered by an underground storage reservoir are many. Contracts must be negotiated with all well owners and land owners in the area for the rights to repressure gas through the wells into the storage horizon, to store the same, and to withdraw it.

In most cases, however, a compressor station must be built near the storage area to take gas from a feed line and force this gas into the pore space in the gas horizons. Pressures used in this process are in excess of 1000 lb. psi.

Some of the best underground storage pools are located in Pennsylvania, West Virginia, New York and Ohio. Some of the sand horizons used are the Murrysville, the Fifty-Foot, Gantz, Oriskany and the Clinton. Of course there are many other horizons used for underground storage.

Operating Data: To illustrate the operating conditions of an underground storage operation, I can best use the Chippewa area of The East Ohio Gas Co. The limits of this pool are completely controlled by stratigraphic trapping. Its area covers approximately 6000 acres, has 18 active wells, and a 1020 hp compressor station. Storage actually began in this pool the latter part of 1941, at which time the rock pressure was 416 lb. This pressure has been built up to 1000 lb., and at this pressure the total amount of gas in storage is 6,000,000 cu. ft., which includes 3,250,000,000 cu. ft. of gas reserves in the area at the time underground storage started. At the pressures given in the table below, gas can be withdrawn from the area in the following quantities per day:

Pressure (lbs.)	*Cu. Ft.*
1000	25,000,000
900	22,000,000
800	17,000,000
700	14,000,000
500	8,000,000
400	4,000,000

To lower or raise the rock pressure one lb., 12,300,000 cu. ft. of gas must be withdrawn from or forced into this storage area. The total cost of this storage area is $1,000,000, including the 3,250,000,000 cu. ft. of gas in reserve prior to the time storage was begun.

It is of interest to note that in the old McKeesport, Pa. gas field one of the big steel companies operating in the Pittsburgh district has for many years stored coke oven gas in the Speechley sand, pressuring the gas in this underground storage area during weekends when more gas was produced than could be consumed, and withdrawing it during the week when the demands for fuel exceeded its production.

Underground Storage and the National Economy: In conclusion it can be said that each of the four methods of gas storage has its peculiar and particular place in the operation of gas properties. The first three—medium and low pressure storage in holders, and storage of gas in liquid form—perform highly particularized, perhaps narrowly specific functions, in mantaining balances between gas supply and consumer demand. But in addition to all of them being vital factors in company operating, the full impact of underground storage on the national economy, as well as the natural gas industry, can be judged from the fact that, as of Dec. 1, 1943, the underground gas storage capacity of the areas in the United States now in use for that purpose was 135,000,000,000 cu. ft., with a delivering capacity of 750,000,000 cu. ft. a day.

Socially, the potentialities of underground natural gas storage are as great as its economic significance. Perhaps they are the same thing, for great industrial communities—whole chains of industrial communities—have been built up about natural gas deposits, with a dependence upon natural gas. Depletion is inevitable. You can't burn your gas and have it too. Depletion comes to all natural gas fields—even the greatest. The Appalachian fields are an emphatic illustration of this. Yet natural gas deposits exist in other and distant sections of the country, which are far in excess of local community demands upon them. The relating of these natural gas deposits, with an excess of production capacity, to communities whose millions of people are dependent on diminishing or already inadequate natural gas supplies, can be regarded almost as a social and economic "must."

Long distance pipe lines are the answer, of course—but they are only one part of the answer. Underground storages, strategically located and adequately calculated for their purpose, are a necessary complement to the transmission lines—almost as necessary to their successful operation as are the fields at one end of them and markets at the other.

So much for the expanding realities of large scale natural gas storage, and the magnitude of its effect both on the gas industry and on the American economy which is our heritage. But the future holds a still greater use for depleted gas fields and their underground storage possibilities. It is not, therefore, in the spirit of prophecy, but only to indicate the way which is clearly ahead of us when I predict that in the not too-distant future many of these same natural gas storage pools in the Appalachian area will be used to store manufactured gas, which will be made in the coal fields of West Virginia, Kentucky, Ohio and Pennsylvania, and present pipe line systems, now transporting natural gas, will be used to transport this manufactured gas.

That this may call for a new chemistry of concentrating heat values in more economical volumes of gas than is now commonly practiced in converting coal to gas, I am well aware. But the means and the materials are at hand, and the desirability of this new use for underground gas storage may be no further away than around the corner. Surely in this day of post-war planning they cannot be overlooked.

(This discussion of Underground Storage will be continued in the June issue by E. G. Dahlgren, technical secretary, Interstate Oil Compact Commission).

CORROSION AND PROTECTION

Of Buried Metallic Structures

Compiled and Abstracted by GUY CORFIELD, Technical Editor, GAS

3. Pipe Coatings

Performance of Coal-Tar Protective Coatings

T. F. P. KELLY, The Barrett Division, Allied Chemical & Dye Division, New York, N. Y. Excerpts from a paper, "Performance of Coal-Tar Protective Coatings in Commercial Use."

THERE are more miles of steel pipe than of railroad track in the United States. The best available records indicate that a total of 425,600 mi. of steel pipe is now in underground service. Approximately 50% of the pipe currently in service is protected with some form of coating.

Of the total coated pipe, 80% represents the portion protected with coal-tar coating, with 20% constituting the portion on which all other types of coatings were used. These figures from trade reports, owners' statements, and coating industry totals enables us to arrive at reasonably accurate figures which represent the generous acceptance of coal-tar protective coatings.

In the petroleum industry, the last decade has seen a vast increase in the use of coal-tar coatings. This increased use did not come about by chance, but is based on observed performance results. In recent instances involving the valuation of underground pipe to be taken up and relaid, fully protected pipe has received valuations of from 35 to 50% greater than bare or only partially protected pipe.

It is significant that coal-tar coatings have found extensive use within the petroleum industry on gasoline and other products lines. The reasoning behind this is quite obvious. Products lines, as the name implies, carry materials of considerable value per unit. They are usually located to serve heavily populated areas where leaks would be hazardous and expensive. In these areas it is impossible to avoid the extremely corrosive conditions where coal-tar coatings have proven effective.

The confidence of the petroleum industry in the value of coal-tar coatings is evidenced by the fact that coal-tar coatings were exclusively selected by War Emergency Pipelines, Inc. to protect the world's largest, longest oil line. The men responsible for the engineering, construction and operation of this line represent the combined experience of a number of companies engaged in transportation of crude oil and its products by pipe line.

In the natural gas industry, as of December, 1941, there was a total of 198,800 mi. of pipelines of which 80% were protected with coal-tar coatings. This has been the case for many years because the industry has had its greatest growth since good coal-tar coatings and application procedures have been available. The wisdom of the engineers' choice in selecting such materials to protect their lines has been proven many times by numerous examinations and records of leak-free performance. The results of these examinations and the records are available.

The quality of the protection provided by coal-tar coatings on their original construction is best illustrated by the fact that when the country's largest natural gas transmission pipe lines increase capacities by looping their systems, they have used exclusively coal-tar coatings for this new construction.

In city distribution work, the use of coating materials of proven value is of essential importance due to the high costs of main and service pipe installations, requiring the removal and replacement of paving, working under congested traffic conditions, etc. There is also the important consideration of the hazards inherent in corroded pipe in heavily populated areas.

Of the 110,000 mi. of gas distribution pipe reported in service as of December 1941, over 95% of the pipe used since 1934 has been protected with coal-tar coatings. When other underground utilities, such as water lines, steam lines, or telephone conduit, have been installed, the many opportunities for examination have shown coal-tar coating is providing excellent protection.

In the water works field, 95% of all the large diameter steel supply lines, mains, and service lines have been protected with coal-tar coating. The proven protection of these coatings has been an outstanding contribution to the fact that steel pipe has, over the last decade, forged rapidly ahead as the most practical material for the transportation of water.

Water works pipe is not only protected on the exterior surface from corrosion with coal-tar coating, but is also lined with coal-tar enamel to prevent tuberculation. When tuberculation occurs in unlined pipe, the carrying capacity of the lines is so reduced that even the expensive increase in power (required for higher pressures) will not compensate for frictional losses. Coal-tar enamel has been found most efficient in the control of tuberculation.

The American Water Works Association has long recognized the ability of coal-tar coatings to provide protection under the conditions peculiar to pipe in water service. This association, after several years of investigation, compiled a comprehensive specification covering all phases of coal-tar materials and their application.

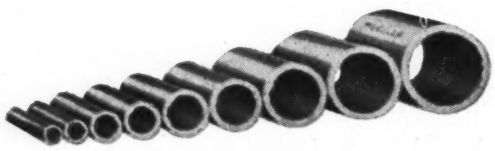
These specifications were based on the best known experience of water supply and distribution engineers, steel pipe producers, and coating manufacturers. It is significant that coal-tar coatings are required exclusively in the specifications which were officially adopted and issued in 1940 as the American Water Works Association Standard Specification for Coal-Tar Enamel Protective Coatings for Steel Water Pipe 7A.5—1940 and 7A.6—1940.

Summarizing, coal-tar coatings are

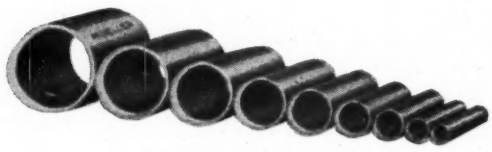
Take it from me, Mister

Unreamed pipe is a hazard to any line whether it be steam, air, oil, gas, or water. The cutting operation leaves burrs. Unless these are removed every joint becomes a collection place for foreign matter and pipe chips. These particles, when dislodged, endanger every faucet, valve, and regulator on the line and may easily damage the seats or cause leakage and improper operation . . . But this is only half of the story. Pipe burrs also reduce the carrying capacity of the pipe. If not reamed, ⅜" pipe loses 44% of its area: a 1" pipe has a loss of area of 22%; and even a 2" pipe will lose 7%. This is why MUELLER Reamers restore a pipe to its full capacity.

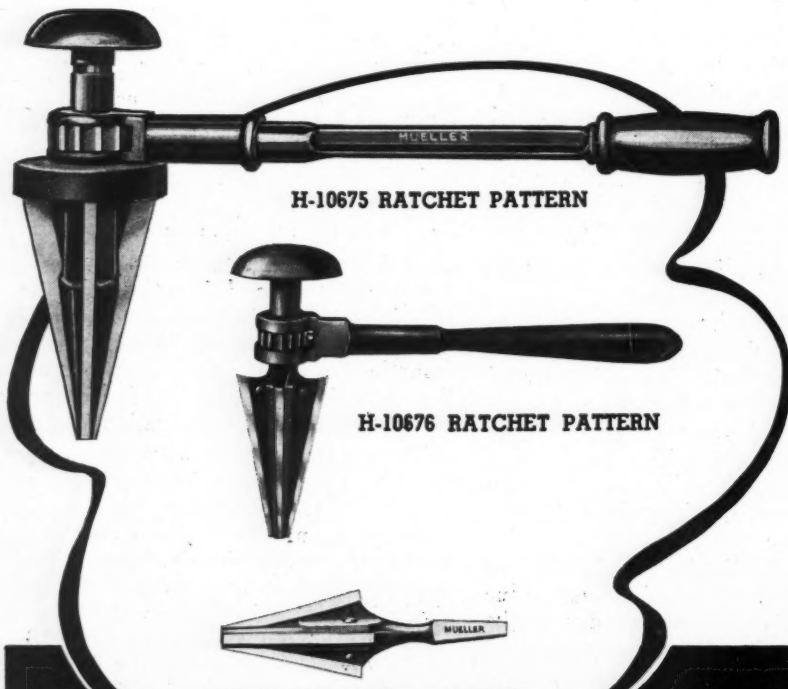
RECOMMENDED BY GOOD WORKMEN EVERYWHERE



Unreamed Pipe Ends



Reamed Pipe Ends



H-10675 RATCHET PATTERN

H-10676 RATCHET PATTERN

H-10677 BIT BRACE PATTERN

MUELLER Pipe End Reamers are sturdily designed to withstand rough usage. A triangular frame holds three first quality tool steel blades. May be readily sharpened and keep a good cutting edge for a long time. Three sizes—large ratchet pattern for pipe sizes ⅜" to 3"; small ratchet pattern for sizes ⅜" to 1¼"; and bit brace pattern to fit pipes of ⅜" to 1¼" . . . MUELLER Reamers are indispensable. Order yours today.

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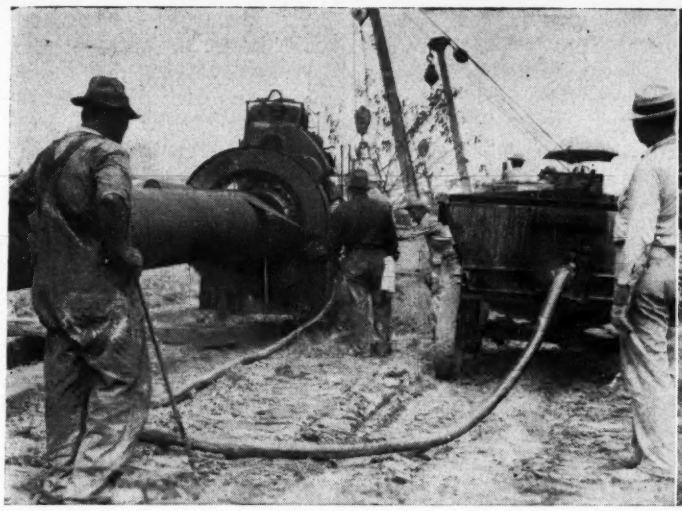

FIG. 1 (left). The most modern machines were employed for cleaning and priming, and for coating and wrapping the War Emergency Pipeline. Close attention to the details of application followed a specification based on the best modern procedures. FIG. 2 (right). The War Emergency 24-in. diameter line passes through soils of known highly corrosive character. The engineers selected coal-tar coating for protecting this vitally necessary oil transportation artery.

valued for their known resistance to the elements of corrosion as they exist in the actual underground exposure of metallic structures. They are economic with relation to the value of the strutcures they protect; they are available in quantity and easy to apply.

These materials have been modernized so that the improved coal-tar enamel of advanced design not only retains all the protective properties of the materials which have served over long periods, but will out-serve the original types due to the functional improvements required of a coating including high resistance to temperature conditions which enable them to be successfully applied in sub-zero weather.

There are many quantitative features which contribute to the long service life of coal-tar coatings which will not be discussed here, but the outstanding greatest values are:

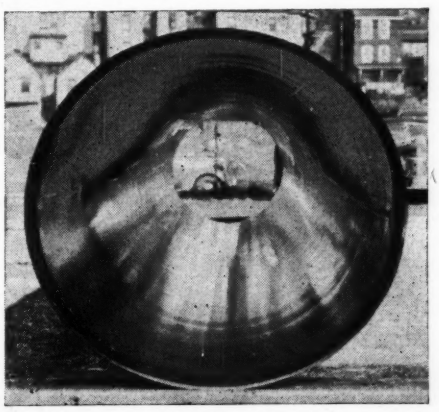

FIG. 3. Typical appearance of water pipe lined centrifugally with coal-tar enamel, which provides high volume capacity over long periods of time.

1. *Resistance to Water Absorption* —This feature of coal-tar enamels has been developed and proven by many investigators who have found them to be the most resistant to water absorption of bitumens used for underground service. This factor is the main contribution to its successful service.

2. *Insulation* — Coal-tar enamels have a high dielectric value, and provide an economical insulator which prevents line currents from discharging into the soil or the pipe from picking up stray currents. This also contributes to the economic application of Cathodic Protection.

3. *Bond*—The bond to steel of coal-tar primers and enamels makes it foremost as a commercial coating. It is basic that if enamel is not bonded to the underlying surfaces, the coatings will not withstand the flexing action of the pipe without rupture under the wide range of atmospheric conditions while it is being handled —shipping, stringing, laying, lowering-in, etc. Bond is a dual function of the primer and the application temperature of the enamel, and the improved coal-tar coatings, because of bond, have a greater resistance to soil action.

Paints for Protecting Structures in Water

FRANK N. SPELLER, Metallurgical Consultant, Pittsburgh, Pa. Abstracts from a paper "Paints for Service in Water."

IN the introduction to my paper for the Soil Corrosion Conference in 1937, the following statement appears:

> Most of the improvements that have been made in pipe coatings apply to the outer part or body of the coating. Practically nothing has been developed commercially to provide a strong final line of defense on the metal surface where failure by pitting starts; in other words, improvements have been mostly from the outside inward.

This appears to be largely true today, as the bituminous primers used to bond hot bituminous enamels to the metal afford very little resistance to corrosion in water. Therefore, when the enamel is penetrated, there is no second line of defense against corrosion.

Since that time, much has been learned by tests and experience regarding underwater paints and what may be expected of them under certain conditions. This experience may also find useful application in the protection of underground structures, especially pipe lines.

Comparative Experience With Paints in Water

To secure the best protection from paint, especially under water, the main essential conditions are:

1.Selection of the most suitable paint system. Much can be learned from a three or four months' test. Where the water or exposure conditions are new, such tests should be made of typical paints that have proved superior elsewhere. Blistering will usually be indicated within a month or two after immersion, especially

when the water is about 30° F above normal temperature.

2. Removal of all old rust and mill scale by sandblasting or other suitable means. Phosphate inhibitive washes improve service with many paints.

3. Proper application under favorable atmospheric conditions. The temperature of the metal should be slightly above that of the atmosphere and not below 50° F. In unfavorable weather the metal may be dried and warmed by means of a bank of 250 watt infra-red lamps placed about one foot away from the surface to be painted. This has proved useful in emergency painting. Wiping with a cleaning fluid like turpentine has been referred to as a safeguard against poor adhesion to the metal.

Cohesion between coats is improved by using the same vehicle or compatible vehicles in all coats, and by keeping the drying time within the optimum range—usually 24 hours between coats. In retouching, or where the time between coats has been too long, much better adhesion can be obtained by adding to the paint 4% (by volume of vehicle) of cellosolve or a similar strong paint solvent.

Conclusion

In the light of present experience, for any special underwater service the choice of a paint system for steel would probably be between one of the phenolic resin-varnish vehicles pigmented with iron oxide, red lead, zinc chromate, blue lead, aluminum, or zinc dust-zinc oxide; or chlorinated rubber with suitable pigmentation. The specific formulation will depend on conditions of service, and should be based on tests in service and the recommendations of reputable manufacturer.

Four or five years ago it was thought that four years' service was reasonably certain from these paints in most waters. Now over twice that period has been obtained in fresh waters where the paint is not subject to abrasion, mechanical injury, or excessive electrolytic effects.

The high electrical resistance of phenolic varnish paints is in their favor. Measurements made after a few days of soaking in tap water showed resistances of two coats of phenolic-zinc dust paint in the order of about one million ohms, falling off slightly after one or two months' immersion. The electrical resistance of paint films varies considerably. The effect of small electric current to or from the painted surface requires further study. Much more damage occurs when the paint is on a metal which is anodic to its environment than when it is cathodic.

Phenolic resin varnishes of the baking type are more durable, but have not been discussed here as their field of use is limited on account of the high cost.

Now, as to the desirability of using one of these paint systems in corrosive soil. In fresh water a good paint system (with three or four coats) should be serviceable for six and perhaps 10 years when protected from abrasion and injurious electrolytic effects. In normal times, when these synthetic materials promise to be obtainable at reasonable cost, they might be used as a more durable primer for bituminous coatings, or by themselves with saturated asbestos paper wrapping to prevent injury in handling and contact with the soil. If used as a first primer the vehicle may require some modification to ensure good adhesion to the bituminous primer and enamel. The aromatic hydrocarbons of the vehicle used in some chlorinated rubber paints are essentially the same as those present in some coal tar primers, so that these paints mix and adhere together readily.

Coating for Steel Casing of 120,000-volt Cable

R. C. ULMER, The Detroit Edison Co.
From his investigations on "Selection of a Corrosion-Preventive Coating for the Buried Seven-Inch Steel-Pipe Casting of 120,000-Volt Cable."

THE cable line in question, which is approximately 7 miles in length, is operated at 120,000 volts and is rated at 100,000 kva. It was placed in service December 31, 1941. A complete description of the cable and its installation is contained in two series of articles, one by McCabe and Hull (1) and the other by Faucett, Komives, Collins and Atkinson (2).

Briefly, the line consists of three 600,000-circular mil, single-conductor cables; each insulated with 0.6 in. of preimpregnated paper and electrically shielded, and all three installed without lead sheath in a 7-in. OD, ¼-in. wall, steel pipe containing nitrogen gas at 200 psi. The temperature of the pipe ranges from 0° to 60° C.

Because uninterrupted service of the line is imperative, it was decided to take all reasonable precautions to prevent failure of the pipe from corrosion. In this respect it was believed that if corrosion should occur to such an extent that leaks resulted, the problems that would arise would be much more serious than those encountered in natural gas and oil lines, where leaks can be rather easily detected. If a leak should occur in this installation it would be troublesome to locate it because nitrogen, being a colorless, odorless, inert gas, would be very difficult to detect, especially if the leak were small. For these reasons, careful consideration was given to the protection of the line.

It was first planned to carry out accelerated tests to determine the relative merits of various commercial coatings and methods of pipe protection. This plan was abandoned, however, because it was felt that conclusive data could not be obtained in time to make a decision on that basis. As an alternative, inquiries were made of manufacturers and users of pipe-coating materials and the results of various pipe-coating tests were reviewed. These considerations led to the selection of the following types of protection as being worthy of further investigation for use on the line: (a) concrete, (b) coal tar, (c) asphalt, (d) paints, (e) greases and waxes, and (f) cathodic protection. The remainer of this paper deals with the various considerations that led to the selection of the particular type of protection used, a description of the protection selected, and finally the method of applying the protection.

Most of the line runs through an industrial section of the City of Detroit. It passes under several street car and railroad right of ways, one of the latter having 20 tracks. Because cathodic protection often does not give good results in urban areas and may actually be a hazard to other structures not so protected, and because of its relatively high cost, cathodic protection was eliminated as a choice and it was decided to coat the pipe. It was known that the soil along the line varied considerably, cinder fill, clay, and sand being present in various localities, but it was decided not to make a soil survey because it appeared desirable to use the best coating available and to coat all of the pipe with this coating, even though parts of the line might require little or no coating on the basis of a soil survey.

In attempting to select the best coating, consideration was first given to the properties that a coating for this purpose should have. These are:

1. Imperviousness to moisture;
2. Ability to withstand soil stresses;
3. Chemical stability;
4. A rather high thermal conductivity.

The importance of each of these items will be discussed briefly.

Imperviousness to Moisture

This property of a coating is perhaps the most important. Moisture absorption is the chief cause for low electrical resistance of a coating; which, in turn, permits current flow and corrosion to occur. Results of various tests, especially those of the AGA([3]), API([4]), and National Bureau of Standards([4]), indicate that thin coatings are ineffective and the thicker the coating the more effective it becomes. This eliminates paints and enamels and limits the selection to materials such as mastics or reinforced coatings. Concrete, of course, is quite pervious to water and cannot pass this requirement.

Ability to Withstand Soil Stresses and Expansion and Contraction

To meet these requirements a coating must be sufficiently rigid to withstand pressure over long periods and elastic enough to withstand stresses resulting from pipe movement and sudden changes in temperature. Recent applications of thin test coatings have failed in these respects([4]). That is, if the coating was sufficiently hard to withstand soil pressure, it was so brittle that it would crack off under sudden temperature changes or while being handled. In this respect, fillers greatly increase the resistance to soil stress and to harm during handling. Use of a reinforced coating such as a mastic is therefore preferable from the standpoint of soil stresses. Concrete may not protect the pipe from electrolysis as it is pervious to water and protects largely by maintaining an alkaline solution in contact with the pipe; and, in addition, it was feared it might crack.

Chemical Stability

Even if a coating is continuous and has the proper mechanical properties, it will probably fail ultimately by gradual deterioration. Many bituminous materials deteriorate rapidly in the soil, especially when exposed in thin layers. Materials that deteriorate rapidly absorb large quantities of water([5]) very readily. It is again evident, therefore, that a thick coating should be selected and that it should contain no material that would readily absorb water or readily deteriorate. Bituminous coatings reinforced with organic fabrics or felts have questionable merit, therefore, because these materials soon rot unless they have been thoroughly impregnated. Again, on the basis of chemical stability, a thick coating such as that afforded by concrete or a mastic is to be recommended.

Thermal Conductivity

In the installation under discussion it is necessary to use a coating with a fairly high thermal conductivity so that heat will be dissipated readily. Again, such materials as concrete or mastic containing a large amount of mineral filler, both of which have a fairly high thermal conductivity, appear desirable.

All of the above considerations, together with the results of recent tests of pipe coatings, indicated that concrete and thick asphalt coatings would be most likely to give the best service. Concrete, as previously mentioned, was not considered satisfactory because of the possibility of its cracking and because it would not prevent electrolysis. For this reason an asphalt mastic was chosen. It was believed that such a coating would combine most of the desirable properties of both concrete and asphalt. Somastic was finally chosen, for the following reasons, as the asphalt mastic to be used:

1. Somastic showed up best in the API tests (4) and at present is the only coating of the group originally included in that test that is still being manufactured.

2. The coating was very highly recommended by corrosion experts and users (6).

3. The coating has given satisfactory service for periods up to 12 years in most of the commonly encountered types of soil (7).

4. It has a fairly high thermal conductivity, 8 Btu. per sq. ft., per hr., per deg. F. per in. of thickness, which indicates that there would be sufficient heat dissipation.

Description of Somastic and Method Used in Application

Somastic is a patented asphalt-mastic type of coating manufactured and applied by the Industrial Engineering Co., Houston, Texas. The general proportions of material in the mastic mixture are([8]):

Asphalt	12% by weight
Asbestos	1% by weight
Sand	63% by weight
Limedust	24% by weight

The materials are blended and thoroughly mixed to secure a density of approximately 135 lb. per cu. ft.

For our installation, the pipe was treated on the site by shotblasting. This action cleaned the pipe and also roughened it to improve the bond. Immediately after shotblasting, the pipe was heated to between 110° and 160° F and a coating of asphalt primer was applied. The dense mastic was then extruded onto the pipe through a rotating nozzle that produced a seamless coating ½ in. thick. The mastic was then sprayed with whitewash in order to overcome stickiness. Approximately 8 in. of each end of the pipe was left bare to facilitate welding. In cases where a bend was required, the pipe was bent after being coated. In some cases the coating required slight repair after bending, but in most cases the pipe could be bent to form 90-degree bends, having 30 ft. radius, without injury to the coating.

After the pipe was welded, the joints were coated with primer, and a steel field-joint form was clamped over the coated pipe at each end, with the center leaves of the form open to receive the coating material. Hot Somastic was poured into the open mold and tamped down around and under the pipe. The adjustable leaves of the form were then drawn together, compressing the material against the pipe. The steel form is so designed that the field joint mastic overlaps the existing coating at each end of the joint creating a monolithic-type of seal. The field joint is actually 1½ times the thickness of the existing coating throughout the pipe section.

The Somastic coating after approximately 6 months' service has an average resistance to ground of 500,000 ohms per lineal foot([7]). Measuring stations are provided at every manhole where checks may be made of the potential drop over 50 ft. of pipe and of the voltage to earth and to other structures. While these stations were intended to serve principally as a ready means of checking for stray currents, it is hoped to employ them also in a method that is being developed for detecting local corroded areas on the pipe, should they occur([7]).

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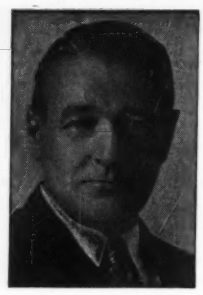
Post-war NOTES and NOTIONS



By STANLEY JENKS

Advertising

The basic reason we sell gas appliances is to promote the use of gas service. Righto.

Then, every time a plumber dealer, a hardware store, department store or a specialty appliance store advertises a gas appliance, modern gas service is being advertised and promoted.

Should this independent outlet be encouraged to do a rip-snorting business in gas appliances (assuming they measure up to standard) or should every such advertisement be greeted as a red rag waved at a snorting bull? The gas company commission salesmen are doing the snorting.

That's the local problem in a nutshell. Open up the field, confine gas company appliance selling to maintaining quality standards and pioneering those new uses for gas where the margin won't cover the promotional expense and a substantial merchandising profit, and I am sure the post war distribution bottleneck will be pretty readily solved.

Distribution

There are some—they have told me so—who question my wisdom in diving off the deep end so often on the subject of postwar dealer relations. I am labelled a visionary, an arm chair star gazer, and one of my old utility friends didn't even hesitate to label me a crackpot on the subject. Maybe so, but I stick to my guns. I know I am right.

This gas industry of ours has all the manufacturing capacity it can use for producing gas appliances. The postwar market for gas ranges, automatic water heaters, refrigerators, space heaters and air conditioners, as defined at French Lick, can and will be filled by our manufacturers, if and when the distribution bottleneck is opened up. Any gas company that feels it can tackle this job alone, in the face of the fuel competition impending, and can do it by plans that exclude all worthwhile manufacturers and their independent dealers, is doing the pipe-dreaming, and not I.

The job will be done, if it is done, by specialists. Profits create specialists. Most of our pre-war dealer cooperative plans flopped because the gas company in too many instances insisted on doing most of the selling and then *charging* the dealer for services rendered. The end result was dealer apathy—money for jam—but none of the training and experience necessary to make him a thoroughly qualified self-starting, self-operating gas appliance sales specialist.

Future Rates

Commenting in April on the future of the manufactured gas industry, I quoted a guest editorial written by G. A. Neal, president of the Sioux City Gas and Electric Co. At that time (1938) Mr. Neal felt that after the average customer had spent $3.00 a month for gas service, it needed bargain rates to get his further business. Talking of manufactured gas, Mr. Neal stated "the retail price should not exceed three times production cost per M. for any use over 2000 cu. ft. per month, and above 10,000 cu. ft. per month the retail price should not exceed two times the production cost." I wondered if Mr. Neal still felt the same way. He does!

"I have no reason to change my original statement of several years ago" he writes me. "If there is any solution of the manufactured gas business, it lies in more and more volume. I think the average distribution system can be made to carry 10 times as much gas by spending an amount equal to about 5% of the distribution investment. The principal costs of added business, therefore, will be due to the cost of manufacturing plant plus production cost."

It's a good postwar angle to study.

Tomorrow's Home

Probably you have seen a copy of the study "Family Behavior, Attitudes and Possessions," made by the John B. Pierce Foundation, New York. It is really a survey of the intimate family habits of two groups, the first living in apartments, with incomes from $2000-$3000 annually, and the other group living in houses, with incomes ranging from $3000-$4500. The idea was to find out how these people live, in order that the home of tomorrow could be better designed to meet their needs. The gas industry is definitely interested.

Much of the material dug up is interesting, but irrelevant. For example, I cannot see a utility sales executive revising his sales policies because the study shows that in the good old summertime 70.3% of the wives sleep in nightgowns, 24.0% in pajamas, 5.0% in the nude, and 0.7% in shorts. But clothing manufacturers and burglars might get some ideas.

It is the kitchen with which we are primarily concerned. Incidentally, some of the women surveyed reported they used the kitchen as a supplementary dressing room. Maybe that is one reason why most of them stated they would like larger kitchens, even at the sacrifice of convenience.

About the same time, the New York *Times* ran a feature story on the same theme, but the story itself was one of those eye-popping, open-sesame scripts, which offered an electronic substitute eventually for every housekeeping ache and pain. The lady-author was definitely dazzled. It read as though she was just back from a date with a radar expert. She passed up nothing in the dream book, even the thermo-couple skewer, which will shut off the juice when the roast is cooked. It would be all very alarming if human nature were what it isn't.

Mr. Edmunds Dunlap, president of the Philadelphia Chapter, American Institute of Architects, commenting on the John B. Pierce Foundation study, had this to say: "When people still use bathtubs for potatoes and coal, they're not going overboard for remote control."

Which seems a succinctly sensible sum-up of the situation.

Milwaukee Gas Light Meets Its Dealers

THE heads of 150 gas appliance firms were the guests of Milwaukee Gas Light Co. at a recent dinner meeting at the Astor Hotel. Henry Dropp, sales manager of the gas company, who welcomed the gathering, had arranged an instructive meeting which gave the interested business men a "down to earth" picture of what might be expected of gas and gas appliances when manufacturing restrictions are removed.

B. T. Franck, vice president of the company, discussed the possibilities of a psychological let-down of the buying public, which, after being fed stories of "dream merchandise," is asked to buy a product greatly resembling that which he saw advertised before the war. He said, "In that market (postwar) good appliances, perhaps even better ones than those of pre-war vintage, may go begging for purchasers. One of the purposes of the meeting is to take stock of this situation." He continued by indicating that it might be well to listen to men of sound judgment and experience after reading the ballyhoo of day dreamers and wishful thinkers.

Bruno Rahn, president of the company, reminisced on the history of the gas company with relation to past wars and also on the precedence of gas service over other utilities in the growing city of Milwaukee. He said, "I hope you will excuse me if I point with pride to the fact that our Milwaukee Gas Light Co. is serving our country during this war as it was during three of the country's five previous wars. Our company was almost 13 years old when the country was split by the Civil War.

"The first plant was a pigmy by present day standards. The total capacity was 40,000 cu. ft. a day. Today, one thousand times that volume is required on a very cold day. The gas holder had a capacity of 75,000 cu. ft. Today's storage as represented by the gas holders at 25th and St. Paul Avenue is almost 300 times as large."

Merchandising Outlook

Mr. Rahn continued by stating that the peace time merchandising future appeared very promising. This statement he based on the pent-up demand for quality household appilances, plus the would-be purchasers reactions to rumors that "pre-war" appliances might be available here or there. He said, "Ever since Pearl Harbor automatic gas apliances have compiled a record of dependable performance, which has never been equaled." He went on by advising his audience that the knowledge of materials and construction gained by gas apliance manufacturers doing war work would rebound to the benefit of the gas appliance purchasers after the war.

Around the table: Bruno Rahn, president, Milwaukee Gas Light Co.; Louis Ruthenburg, Servel, president; Milwukee Gas Light vice president, B. T. Franck; H. L. Ashworth, business manager, Wisconsin Radio, Refrigeration, and Appliance Association; A. F. Herwig, secetary, Wisconsin Utilities Association; John Fry, president, Detroit-Michigan Stove Co.

Natural gas, too, was predicted as another postwar reality for this community. Mr. Rahn said, "I feel positive that the opposition to natural gas will earn a fate identical with that of the opposition to canals, railroads, automobiles and radios." He concluded with the hope that the company could again give dealers in gas appliances active support during the coming peace time.

Louis Ruthenburg, president of Servel, Inc., advanced the thought that the possibility of a partial reconversion to consumer production might be nearer than some people expect. He said that in less than two years of capacity production the industries of the United States have produced enough war materials to fill the lines of supply and the reservoir which were virtually empty at the time of the Pearl Harbor disaster. More than 50% of our country's industrial capacity is now engaged in war production, but we cannot long continue to utilize this enormous capacity merely to replace usage of war materials. Cut-backs and cancellations already are becoming generally evident. However, the time at which gas appliances will again be available in volume cannot now be accurately forecast.

He stated further that the vitally important postwar job will be the selling job. As a result of war production we have enormously expanded productive facilities. A high level of employment is the prime requisite for social stability and preservation of the American way of life. Satisfactory employment must be supported by great production, and production in turn depends upon intelligently planned, aggressive selling. A selling job without precedent is, therefore, required, and this job must be preceded by intensive research and bold, intelligent planning. Business management must take the aggressive initiative in bringing about a new order of cooperative selling.

Manufacturer Presents Views

John Fry, president of the Detroit-Michigan Stove Co. presented the view-point of the gas range manufacturer with relation to government orders, resertictions, etc. as they now apply together with the thinking going on in Washington with reference to gas range manufacturing, when and if material is released for civilian production. In his opinion no civilian gas range production can be expected until the government knows definitely what the overall war materiel replacement demand will be. This, he said, cannot be determined with any degree of accuracy until the European invasion is well under way. Mr. Fry concluded by stating that he was quite certain that the first new gas range models would be very much like those sold just before manufacturing was stopped.

An enlightening movie of Axis wartime production concluded the program. This showing gave the spectators something to think about, especially those whose wishful thinking see United Nations victory in the very near future. That enemy production is also on a high level was clearly depicted and, summarizing all of the report contained in the various scenes shown, one just had to decide that there is still plenty of work and fighting to be done before civilian life "as usual" or anything like it, will return.

ASSOCIATIONS

Natural Gas Department Faces Big Task

RUNNING the gamut from broad discussion of future industry policy to investigations into the finer points of the technical problems of natural gas storage and transmission, the papers presented before the first spring conference of AGA's new Natural Gas Department at French Lick, Ind., on May 11, 12, and 13 gave 350 utility and appliance and equipment executives a comprehensive view of the gas industry as it is today and as the forces of government and competition may shape it tomorrow.

Lead off speaker at the opening general session, presided over by Natural Gas Department Chairman J. French Robinson, was Alexander Forward, managing director, AGA, who summarized the progress of the Association and stressed the important part that the new natural gas department will play in the trying days ahead.

The opportunities and responsibilities of the new Natural Gas Department both in working in close harmony with the manufactured gas segment of the industry and in taking a realistic view toward the coming competitive situation were outlined by AGA President Ernest R. Acker. As a first step towards meeting the competitive problem a committee was appointed to coordinate the promotional activities of the industry including national advertising and long range research.

R. E. Wertz, past chairman of the Natural Gas Department, in presenting his thought-provoking paper on the freedom of natural gas in interstate commerce said:

> " . . . it should be clear that several vital problems are at the threshold of the natural gas industry. We must anticipate that there will be increased opposition to the exportation of gas by the major producing states. While a statute prohibiting exportation may not be constitutional, other methods of accomplishing the same end will be attempted, such as taxation or collaboration with the Federal Power Commission to prevent the issuance of a certificate of public convenience and necessity. We must also anticipate that attempts will be made to prevent the utilization of gas for what are considered to be uneconomic uses.
>
> "It is assumed that most of these issues will be weighed and resolved in the scales of public interest. It would be gross negligence on the part of the natural gas industry if it did not take a prominent part in assembling the necessary facts to be weighed. In the light of experience and knowledge, who is better qualified to testify?
>
> "Fortunately, our new Natural Gas Department arrives upon the scene just in time to grapple with these problems. There is no other body so thoroughly qualified to prepare and present the industry's point of view."

Turning the attention of the delegates toward the political picture, Chairman Robinson in his address made a plea for continual and industry wide effort towards the preservation of the "American System," which he defined as "representative self-government as guaranteed by our Constitution." Stating in essence that we must not lose through this war the principles we are fighting for, Mr. Robinson brought out that it is the sacred trust of the gas business, and of all business, to preserve the American Way for the boys we have asked to die.

Speaking of industry-government collaboration, he said:

> " . . . we have gained, through war, experience and knowledge in organizing the entire Petroleum Industry into a smoothly working, efficient, and highly responsive mechanism. The temporary coordination of oil and gas was the voluntary and, therefore, effective response to an emergency. It was logical and necessary against that background. Its lessons will never be unlearned, nor will the volunteering willingness which energized it ever be lost.
>
> "We delegated authority but we did not surrender control. That principle is the heart of the American system. Believe me, we are not taking our finger off its pulse! Industrial integration and coordination will function as long as they are voluntary—but no longer."

The responsibility of management in the selection and training of employees was emphasized by Dr. Charles E. Lawall, president of West Virginia University. Industry in general has much to learn, stated Dr. Lawall, from the military services and war industries where enlightened and intensive training methods have accomplished remarkable results with inexperienced employees in a short time. He cited instances where employee morale was elevated a thousand-fold by active interest and direction on the part of top management. Because of the practical demands of war, institutions of learning are generally reappraising education in terms of its use value.

At the second general meeting of the conference, the attention of the delegates was directed to some of the more practical aspects of natural gas operation.

The first speaker, C. W. Cooper, vice president of Consolidated Natural Gas Co., New York, dealt with the development of an installation in the McKamie gas field in southwestern Arkansas in which the hydrogen sulphide removed from sour natural gas is converted into free sulphur. The gas from the 17 wells in the field has an average hydrogen sulfide content of about 4300 grains per 100 cu. ft., and in its natural state is completely unmarketable. Through the treating system which went into operation in March, the field now produces 60 tons of molten sulphur daily in addition to large quantities of dry, sweet fuel gas, butane, propane, and gasoline.

Kenneth Eilerts, physical chemist, Petroleum and Natural Gas Division, U. S. Bureau of Mines, described flow tests on gas-condensate wells. Portable field laboratories are being used to obtain data to (1) prevent loss of valuable components as reservoir pressure is reduced; (2) yield technical information towards the planning and designing of efficient field tests. The importance of condensate fields is shown by the fact that there are now 39 cycling plants in operation or under construction with a total capacity of 5,000,000 gals. or 120,000 bbls.

Two other papers of general interest, "Natural Gas Cycling and its Significance to the Natural Gas Industry" presented by Dr. Frank H. Dotterweich and "Our Natural Gas Reserves" by Lyon F. Terry, second vice president, Chase National Bank, New York, are treated elsewhere in this issue (pages 25 and 26 respectively).

The realities of war were brought to the delegates at an evening meeting by Captain E. M. Borger, American Field Service and president of the

NATIONAL ADVERTISING FOR 1944-45

Plans for the gas industry's national advertising program for 1944-45 will be described in a promotion piece which is scheduled to be distributed to the gas industry on or about June 15th. This new campaign was approved at a meeting of the Committee on National Advertising held at French Lick, Ind., May 9.

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FULL SIZE
FULL PORCELAIN
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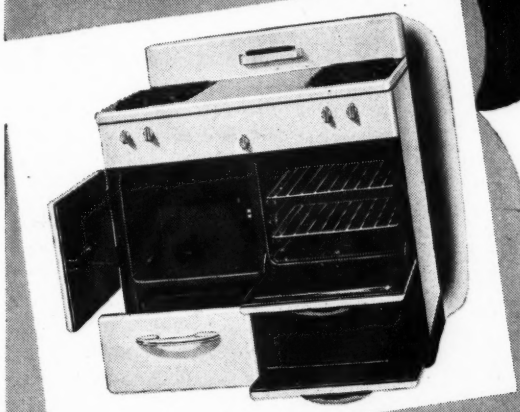

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- Porcelain top grates
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- Automatic top lighter
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- Porcelain broiler pan and porcelain smokeless grill
- Heavily insulated *Even-Temp* oven in porcelain finish
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- Recessed "toe-room" base
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GAS CAMERA

• AGAEM's new officers: Treasurer **John Van Norden,** treasurer, American Meter Co.; Vice President **D. P. O'Keefe,** president, O'Keefe and Merritt; President **Lyle C. Harvey,** president, Bryant Heater Co.; Vice President **John L. Robertshaw,** president, Robertshaw Thermostat Co.

• AGA Vice President **J. French Robinson** (right) who serves also as chairman of the Association's Natural Gas Department, talks matters over with **Elliott Taylor,** Washington editor of GAS.

• New Presidents **Clarence W. Goris** (above) of the Indiana Gas Association and **Charles K. Steinmetz,** (right) Pennsylvania Gas Association.

• Indiana Gas Association leaders **Paul A. McLeod,** secretary-treasurer; Program Committee Chairman **C. V. Sorenson;** Retiring President **Guy T. Henry,** snapped at the Association's Indianapolis meeting in May.

• Among the delegates to AGA's Natural Gas Department meeting at French Lick, Ind. in May were **J. A. Thompson,** vice president, Belmont Quadrangle Drilling Corp., Bradford, Pa.; **C. J. Shuttleworth,** assistant treasurer, Mississippi River Fuel Corp.; **George W. McKinley,** engineer, Hope Natural Gas Co., Clarksburg, W. Va.; **M. C. Madsen,** chief engineer, Northern Natural Gas Co., Omaha; **Charles F. Turner,** chief chemist, The East Ohio Gas Co., Cleveland.

• At the Pacific Coast Gas Association's Industry Development Meeting in Portland, Ore: **N. Henry Gellert,** president, Seattle Gas Co.; **R. G. Barnett,** vice president and general manager, Portland Gas and Coke Co.; PCGA vice president **O. R. Doerr,** general sales manager, Pacific Gas and Electric Co.; **H. L. Masser,** chairman, PCGA Gas Industry Development Committee and executive vice president, Southern California Gas Co.

Peoples Natural Gas Co., Pittsburgh, who had just returned from 16 months of forward ambulance work with the British Eighth Army in Libya, Tunisia, and Italy.

To comment at any length on the many excellent technical papers presented before the sessions on gas storage and long distance transmission, led respectively by Mr. Robinson and Robert W. Hendee, would require much more paper than WPB allows. Suffice it to say that to the specialists in attendance at the conference they were of great interest and value.

NEGA Sales Managers Meet

The New England Gas Association's sales managers met jointly this year with the company managers on June 9 at the Hotel Statler, Boston.

The meeting covered the Postwar Planning Report No. 4, "Economics of Sales—Manufactured Gas." (See page 23).

John J. Quinn, general sales manager, Boston Consolidated Gas Co., and past president, NEGA, gave introductory comments regarding the report. Charles H. O'Donnell, superintendent, development division, Boston Consolidated Gas Co., spoke on "Evaluating New Business Efforts," and Hall M. Henry, president, NEGA, discussed "Study of Salesman Power."

At the joint luncheon, Roy E. Wright, director, gas sales, Negea Service Corp., had as his subject, "Evaluation of Home Service;" and Hazel R. Cheever, chairman, NEGA Home Service Group, chose "NEGA Home Service Program."

At the continuation of the morning conference J. P. Leinroth, general industrial fuel representative, Public Service Electric & Gas Co., spoke on "Revenue Life of Appliances;" R. E. Ginna, assistant to president, Rochester Gas & Electric Corp., on "Minimum New Business Expenses to Hold Revenues;" and Mr. Henry on "Effects of Aggressive New Business Efforts."

Mid-West Meetings Planned

The Mid-West Gas Association's one-day sectional meetings proved to be so popular last year, plans have been made to continue them again this year on the following schedule:

June 16, Hotel Lowry, St. Paul, Minn.; September, Omaha, Neb.; November, Minneapolis, Minn.; February, 1945, Des Moines, Iowa.

The committee in charge of the St. Paul meeting will be Ralph H. Meserve, Northern States Power Co., St. Paul, and George B. Johnson, Minneapolis Gas Light Co.

AGAEM Stresses Utility-Manufacturer Unity

HARMONY within the organization as well as harmony in its relationships with the utility industry, was an outstanding attribute of the deliberations of the Association of Gas Appliance and Equipment Manufacturers whose members assembled nearly 200 strong for their annual meeting in Chicago on May 8 and 9. Continuing its own organizational new deal, Frank Hoenigmann's nominating committee advanced a slate proposing the following officers for the coming year, all of whom were elected by unamimous acclaim: president, Lyle C. Harvey, president of the Bryant Heater Co.; vice presidents, D. P. O'Keefe, president of O'Keefe and Merritt and John L. Robertshaw, president of the Robertshaw Thermostat Co.; treasurer, John Van Norden, treasurer, American Meter Co.

With routine presidential remarks and words of welcome taken care of, the balance of the open session for the first day of the meeting was generally devoted to hearing representatives of the American Gas Association describe the postwar planning, program and research committee work of that organization.

Ernest R. Acker, AGA president sounded the keynote of the meeting as far as utility interest in AGAEM deliberations were concerned when he said in effect that the fortunes of gas companies and gas appliance manufacturers are tied together. He also warned manufacturers that their future depends on the future of the utilities. Various AGA sponsored projects over the past two years have given ample indication of the importance that the utilities attach to the design and efficiency of gas appliances as load builders and load retainers for the postwar era. Investigations on a national scale have been undertaken to ascertain customer preferences in various types of gas ranges; laboratory research is deeply involved in attempting to create new and advanced conceptions of gas combustion in domestic appliances and a coordinated kitchen program looks to the integration of anything architecturally or functionally new in kitchen design with suitable gas appliances.

From the remarks of Mr: Acker, as well as those of other AGA representatives, Alexander Forward, managing director, Everett J. Boothby of the Washington Gas Light Co. and C. V. Sorenson of the Northern Indiana Public Service Co., it was made amply evident that the utilities expect manufacturers to: take up the findings that are available on customer preference, and style appliances in conformity with them; start in where the AGA laboratory research on combustion methods leave off and work toward improvements particularly in burner and automatic ignition design; and set aside much greater sums for sales promotion and advertising in an endeavor to bring the gas presentation into the same class with electricity.

The utilities, on the other hand, are prepared to measure up to newer and more exacting standards of their own, if the advice of their industry leaders are heeded. They will support manufacturers who support industry programs; they will gamble on promising new developments even though an element of commercial risk may be involved; and they will not continue to make price the major criterion in placing appliance orders.

The immediate situation as far as manufacturers are concerned was discussed in remarks by retiring president Willard F. Rockwell, Henry H. Morse, chairman of the industrial publicity committee and Frank H. Adams chairman of the postwar planning committee. Colonel Rockwell sees a gradual resumption of civilian production in inconspicuous projects that will not call down the condemnation of army or navy officials interested in keeping up the illusion of scarcity. Mr. Morse favors continued OPA price controls, but believes the law should be rewritten in a manner strictly delimiting the agencies' jurisdiction and keeping it out of the field of

CALENDAR

June

Mid-West Gas Association, 1st of four one-day sectional meetings—Hotel Lowry, St. Paul, Minn., June 16.

AGA Conference on the Operation of Public Utility Motor Vehicles—Hotel Bellevue-Stratford, Philadelphia, Pa., June 27.

July

Metropolitan Heating and Air Conditioning Council—Union, N. J., July 28.

September

Mid-West Gas Association, 2nd of four one-day sectional meetings—Omaha, Neb.

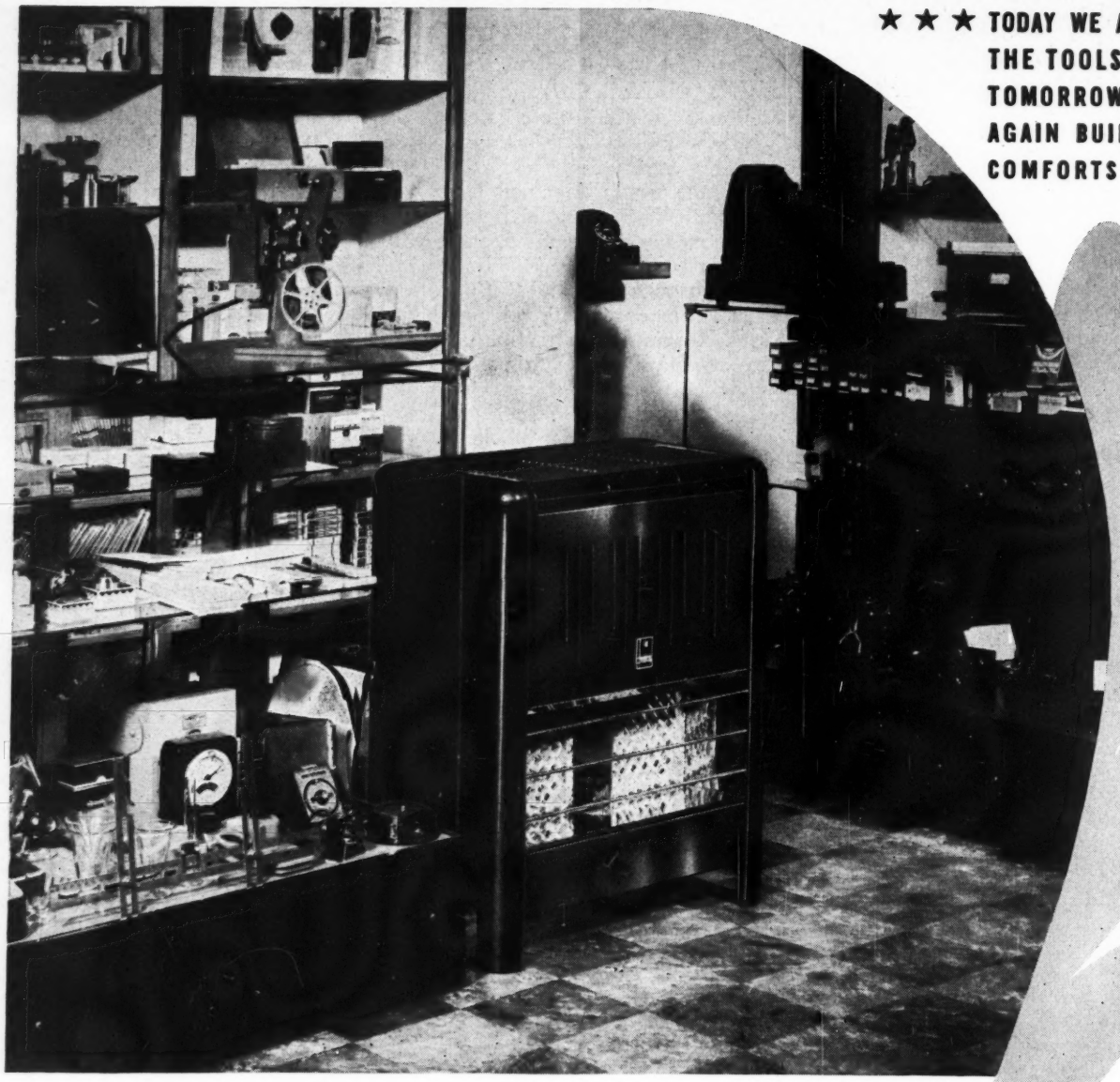
Pacific Coast Gas Association, Annual Meeting—Ambassador Hotel, Los Angeles, Sept. 13-14.

November

Mid-West Gas Association, 3rd of four one-day sectional meetings—Minneapolis, Minn.

American Petroleum Institute—Stevens Hotel, Chicago, Ill., Nov. 13-16.

★ ★ ★ TODAY WE ARE BUILDING THE TOOLS OF WAR... TOMORROW, WE WILL AGAIN BUILD THE COMFORTS OF PEACE



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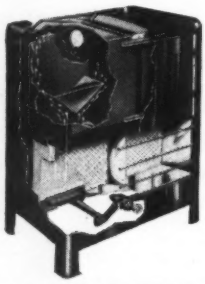
Long after the first low cost has been forgotten, a Humphrey Radiantfire Circulator continues to give economical, dependable heating service . . . *Satisfaction that Endures!*



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profit control which it seems anxious to invade on the slightest provocation.

Frank B. Boice, a director of the Liquefied Petroleum Gas Association and an official of the Shell Oil Co., spoke on the future of the LP-Gas industry in the closing general session of the meeting. Mr. Boice, who has a background of experience in LP-Gas that is practically as old as the industry itself, is of the opinion that a big postwar expansion lies ahead in the field of butane and propane distribution. Improved LP-Gas techniques, improved appliances, more dealers and increased public acceptance are the four factors that presage this growth. There will be plenty of gas available, and an increase of as little as one cent per gallon in tank car prices would result in still further production according to Mr. Boice.

In one of the numerous afternoon meetings that were devoted to the various divisions of the AGAEM it was decided to up the CP range to $20,000 for the next six months.

The water heater division talked over ambitions plans for a comprehensive promotion campaign but no final decisions were made as to the exact nature of the procedure, or when it will start.

H. Leigh Whitelaw, winding up his first year as managing director, delivered a report that was regarded as highly satisfactory by the officials of the association and was well received by the majority of the rank and file of lay members. Two of the main planks in his platform—closer cooperation with AGA and returning to membership disgruntled companies who broke with the previous regime have both been accomplished.

Indiana Meeting Attracts 200 Delegates

With their thoughts turned toward the future, 200 Indiana gas utility executives gathered at the Lincoln Hotel in Indianapolis on May 15 and 16 for the 34th Annual Convention of the Indiana Gas Association. In the absence of President Guy T. Henry the opening meeting was conducted by President-elect Clarence W. Goris, vice president of the Gary Heat, Light and Water Co.

Other officers who will lead the Association in the ensuing year are: vice president, Herman G. Horstman, Public Service Co. of Indiana, Indianapolis; secretary-treasurer, Paul A. McLeod, Public Service Co. of Indiana, New Castle. New directors are R. S. Brunner, Terre Haute Gas Corp.; A. E. Hatley, Central Indiana Gas Co.; E. E. Linburg, Richmond Gas Corp.; and E. M. Hahn, Kokomo Gas and Fuel Co.

AGA Meeting Set

The twenty-sixth annual meeting of the American Gas Association will be held at the Stevens Hotel in Chicago on Thursday and Friday, October 5 and 6, 1944.

The presidential address of Mr. Henry tracing the growth of the gas industry in Indiana revealed a 17% growth in sales; 15% in revenues; 6% in customers. Industrial sales were up 19%; revenues 23%. He advocated the formation of a strong merchandising policy emphasizing the need for finding new and contacting old sales personnel and dealers.

High point of the first session was the presentation by A. M. Beebee of the "31 Recommendations to the gas industry" as outlined in Postwar Planning Report No. 3. (See page 18).

Following the technical, accounting, and sales committee reports, the principal speakers at the afternoon session included George A. Sass of the Citizens Gas and Coke Utility, who gave the results of one year's operation of his company's free appliance repair plan; and AGA Managing Director Forward; John H. Dillon, teacher Trainer-Distributive Education, Indiana University, stated that there is need for thought and revised procedure in the selection and training of emyployees. He stated that the weighted application blank, the controlled interview, job analysis, incentive compensation and Walt Disney cartoons will play important roles in rebuilding and training personnel after the war. The objective, he said, should be to make every superintendent a trained trainer.

In discussing the Servel air conditioning unit at the second day's session John K. Knighton stressed its need as an aid to health. He stated that the potential market for the air conditioner, based on 1.000.000 new homes per year was 350,000, since 35% of new home construction is expected to be in the $7500 or higher bracket. Actual plans call for the sale of 1 to 3 units per 1000 meters.

Wallace Chamberlain, chairman of the Domestic Range Committee, in discussing the future of the CP range, asked for as many ranges as possible as soon as the war conditions would permit with two major improvements: (1) economical automatic ignition; (2) reduced surface temperature.

Other morning speakers were David C. Slipher, vice president of Continental Homes, Lafayette, Ind., and G. F. Sheely, managing director, Indiana Retail Hardware Association.

Discussing postwar business conditions, Dr. Albert Haring, professor of marketing, Indiana University, stated that the gas utilities could do much toward alleviating unrest among their employees during the turbulent adjustment period ahead by a frank statement of policy regarding wages, hours, and re-employment plans.

Walter C. Krause of McCann-Erickson in discussing advertising stated that the preferred medium for gas utilities would be the newspaper, but that copy must be prepared with greater care and skill due to the coming intense competition for the consumer's dollar.

Carl Sorby, Roper vice president, brought the meeting to a dramatic close with his presentation of the kitchen of the future. (See page 17).

Florida-Georgia Meter Men Look to the Future

The annual spring meeting of the Gas Meters Association of Florida-Georgia was held in Miami Beach, May 19-20.

The theme of the program arranged by Bond Collins and Ted Bergman was "Postwar Planning." Gas industry speakers on this subject, included: C. V. Sorenson, vice president Northern Indiana Public Service Co., and chairman of the AGA residential section; Carl Wolf, president, Atlanta Gas Light Co. and chairman of the AGA committee on national advertising; W. F. Rockwell, president of Pittsburgh Equitable Meter Co. and president of Association of Gas Appliance and Equipment Manufacturers; H. B. Pearson, president, Semet-Solvay Engineering Corp.; and Carl Sorby, vice president, George D. Roper Corp.

PCGA Annual Meeting Set for Sept. 13 and 14

President E. L. Payne of the Pacific Coast Gas Association, announced that the 51st Annual Meeting of the Association will be held in Los Angeles, Sept. 13 and 14., at the Ambassador Hotel. It will be another war-time meeting, streamlined to essential items of business.

Frank C. Packer, Payne Furnace and Supply Co., will be in charge of the arrangements.

President Payne has appointed the following members to the Association's General Nominating Committee: R. S. Fuller, Pacific Gas and Electric Co., chairman: E. S. Hoyt, Jr., Hoyt Heater Co.; H. L. Masser, Southern California Gas Co.; F. R. Merris, Washington Gas and Electric Co.; D. P. O'Keefe, O'Keefe and Merritt.

PCGA Industry Development Meeting Held in Portland

A well balanced program of papers and discussions by men with viewpoints and thoughts representative of the entire coast featured the Pacific Coast Gas Association's industry development conference in Portland, Ore., April 26-27.

H. L. Masser of Los Angeles, chairman of the committee for gas industry development and executive vice president of Southern California Gas Company, presided, in the absence of Association President E. L. Payne of Beverly Hills, Calif., unable to attend due to a war production schedule.

Such subjects as the necessity for manufactured gas utilities to be leaders in the chemical age through by-product development; appliance improvements—actual, planned and hoped for; personnel problems under war as well as postwar conditions; wartime distribution, including plastic pipes, were opened for discussion.

Advertising and sales in the postwar period received attention, and free enterprise came in for great emphasis as an economic factor without which the entire industry's plans cannot survive.

Setting the keynote of the conference, the newest member of the Association, President N. Henry Gellert of Seattle Gas Company crystalized in his paper, "The Job Ahead," some thoughts, criticisms and suggestions that reverberated again and again through all sessions. (See page 15).

At the closing session Chairman Masser proposed a resolution recommending that President Payne appoint a committee of utility executives whose job it will be to see that the industry's wishes are not only formulated, but placed before the proper groups for immediate action.

O. R. Doerr, vice president, read a message of greeting, and an expression from manufacturers that gases be standardized to lower costs of appliances, from President Payne.

Other speakers were E. L. Hall, vice president and chief engineer of Portland Gas & Coke Co.; Elting Henderson, manager of distribution, compression and storage, Southern California Gas Company; R. J. Phillips, chairman of the sales and advertising section and engineer of gas sales, San Diego Gas & Electric Co.; O. R. Doerr, general sales manager, Pacific Gas & Electric Co.; W. G. Vincent, vice president and chief engineer, Pacific Gas & Electric Company, unable to attend, but whose paper was read by Doerr; W. R. Davis, personnel manager, Southern California Gas Co.; W. M. Jacobs, chairman of the committee on postwar appliances and general sales manager, Southern California Gas Co.; and F. A. Allen, assistant supervisor of the AGA Testing Laboratories in Los Angeles.

C. K. Steinmetz to Head Pennsylvania Association

More than 300 representatives from public utility gas companies throughout the state, assembled May 2nd in Philadelphia for the 36th annual meeting of the Pennsylvania Gas Association.

"The Gas Industry in the Postwar Period" was the theme of the meeting, featuring a day and evening session. and presided over by W. G. B. Woodring, operating manager, Allentown-Bethlehem Gas Co.

R. D. Calkins, Dean, School of Business, Columbia University; Ernest R. Acker, president, American Gas Association; Hudson W. Reed, president, The Philadelphia Gas Works Co.: H. Carl Wolf, president, The Atlanta Gas Light Co. and Alexander Forward, managing director, American Gas Association, were featured speakers.

President-elect C. K. Steinmetz has the following officers on his staff: 1st vice president, Louis C. Smith, Harrisburg; 2nd vice president, C. B. Melton, Chambersburg: 3rd vice president, O. E. Benson, Easton. filling the unexpired term of Frank H. Trembly, Jr.; secretary, William Naile, Lebanon; treasurer, James A. Schultz, Reading. Members of council for a three year term: Andrew J. Leib, Hazelton; James J. Moffatt. Pittston; Bernard V. Pfeiffer. Philadelphia; Carl A. Schlegelm, Philadelphia.

Cooper, Weymouth Resign

Marking the termination of a long-time association between them, the retirement of Howell C. Cooper and Thomas R. Weymouth as chairman and vice chairman respectively of the Main Technical and Research Committee of the Natural Gas Department of the American Gas Association, was recently announced.

Continuing in consulting work—some of it involving the war effort—both had retired from active business some years previous, and felt that the reorganization of the Natural Gas Department of the Association constituted an opportune time for them to bow out of active leadership and permit younger men in the industry to take their place in the vital research activity.

Both Mr. Cooper and Mr. Weymouth have received the Charles A. Munroe Award, the industry's highest honor. Mr. Cooper has been credited with having been largely responsible for the respected position which the Main Technical and Research committee held in scientific circles of the gas and related industries.

Mr. Weymouth, upon receiving the Munroe award in 1941, was cited for his leadership as chairman of the Gas Measurement Subcommittee in organized research and, also, for his long record of individual accomplishments.

PCGA Personnel Meeting

Under the sponsorship of the Pacific Coast Gas Association, a Personnel Conference was held on March 29-30 in the general office of the Pacific Gas and Electric Co. Virtually all of of the Pacific coast gas utility companies were represented, under the chairmanship of R. R. Blackburn of Southern California Gas Co.

Among many interesting devices to curtail labor turnover, several companies reported they have been using an "exit interview." Those organizations which had tried this method concurred in the opinion that such interviews not only disclose to great extent the reasons for employees leaving, but in some cases, employees were disuaded thereby from going.

Subjects ranging from military deferments, through maintenance of discipline in wartime and collective bargaining, to postwar plans were discussed, with the represented companies contributing constructive ideas on wartime personnel problems.

Heating Surveys and Costs Feature New York Meeting

At the May 17th meeting in New York of the Metropolitan Heating and Air Conditioning Council, the following officers were elected: chairman, William J. Schmidt, Long Island Lighting Co., Mineola, N. Y.; vice chairman, J. J. Wholey, Rockland Gas Co., Spring Valley, N. Y.; secretary-treasurer Robert Lawder, Consolidated Edison Co., N. Y.

It was also decided to hold a summer conference at Union, N. J., tentatively scheduled for Friday, July 28. Manufacturer's representatives would be invited to attened.

The formal program consisted of a discussion on the various methods employed to make house heating surveys and cost estimates. This discussion was led by Edward Gerridge, Brooklyn Union Gas Co., and it was decided to appoint a committee consisting of three members with Gerridge as chairman to study the various methods of estimating used by member companies, with the purpose of devising a uniform method of surveying and estimating which could be adopted for use by the council.

WLB Grants Wage Raise To San Diego Workers

A dispute over wage increases at the San Diego Gas & Electric Co. has been settled by the 10th Regional War Labor Board.

When the Board recently approved five-cent an hour boosts for 40 laborers, increasing the pay to 80 cents an hour, the A.F.L. Brotherhood of Electrical Workers protested that the wage structure had been thrown out of balance by failure to make corresponding raises in other classifications.

The union asked for a blanket increase of five cents an hour for all 800 workers under its jurisdiction. The company, however, proposed to the Board that classifications receiving less than 80 cents an hour be brought to that level and placed on a parity, at least, with the new laborers' scale.

In a Los Angeles hearing, the Board adopted the company's suggestion, and authorized raises of two to five cents an hour for 20 janitors, junior shop clerks, junior storekeepers, helpers and plant guards. All increases are retroactive to Aug. 17, 1943.

Previous demands by the union for a blanket raise of 8% were denied by the Regional Board on the grounds that pay increases in recent years already exceeded the 15% Little Steel formula.

Water Heater Requirements Issued by Laboratories

The ninth edition of the gas water heater approval requirements, effective Jan. 1, which were adopted by the American Standards Association, Feb. 23, as American Standard are now available in printed form. Copies may be obtained from the American Gas Association Testing Laboratories, 1032 E. 62nd St., Cleveland 14, Ohio.

Some changes in the construction features consist of the compliance of various commonly used accessories with latest American Standard listing requirements. The water heater standards have been brought in line with those of other gas appliances performance tests. For use with manufactured gas, the normal test pressure has been increased to 6 in.; there are provisions for tests and certification of water heaters for use with mixed gases; and provisions for testing insulated gas water heaters for insulation flush to walls.

Canadian Utility Expands To Meet Increased Demand

An increased demand for gas services, owing to fear of a coal shortage, is noted in the annual report for 1943 of Northwestern Utilities Ltd., Edmonton, Alberta. As a result, the company found it necessary to complete duplication of the main transmission line from the Viking gas fields in Alberta to Edmonton, to drill six new wells in the Kinsella field, and to expand substantially the gas gathering and transmission facilities. The report shows net profit of $332,524, or $3.28 a common share, compared with $269,711, or $2.54 a share in the previous year. Current assets appear at $547,445 and current liabilities $178,072 against $387,943 and $434,129 respectively at the end of the previous year.

People's Gas Light and Coke Co.'s Division Street Station.

Peoples Gas Light Revamps Distribution Facilities

WORK was recently started on the installation of natural gas mains extending from Peoples Gas Light and Coke Co.'s Crawford Station, present terminal of one of the natural gas pipelines into Chicago, to three of its water gas producing stations; i.e., South and Twenty-Second St. Stations on the near South Side and Division St. Station on the near North Side.

Upon the completion of this work the potential available supply of 800 Btu. gas in the community will be increased by approximately 20%. The continued growth in the demands for such gas since 1939, due in part to the requirements of the war, has made this installation necessary now, rather than in the postwar period when its construction was originally scheduled.

It will provide a supply of natural gas for mixing with water gas produced at the above mentioned stations. The actual mixing will be done at Throop St. Distribution Station (with water gas produced at the adjacent South and Twenty-Second St. Stations) and at Division St. Station. In addition, some of the water gas sets at the three production stations will be equipped to reform natural gas.

Not only will this project provide a more comfortable margin between wartime peak demands for gas and the available daily supply, but it will also place the company in a favorable position to meet the requirements of the postwar period when current restrictions on the use of gas are removed and appliances become available.

The installation consists of about 10 miles of 30-in., 24-in., and 20-in pipelines. Approval of the project and the acquisition of materials therefore was obtained from WPB late in 1943. It is hoped that the work will be completed and the installations in operation by Fall.

Worthington Pump Buys Electric Machinery Mfg. Co.

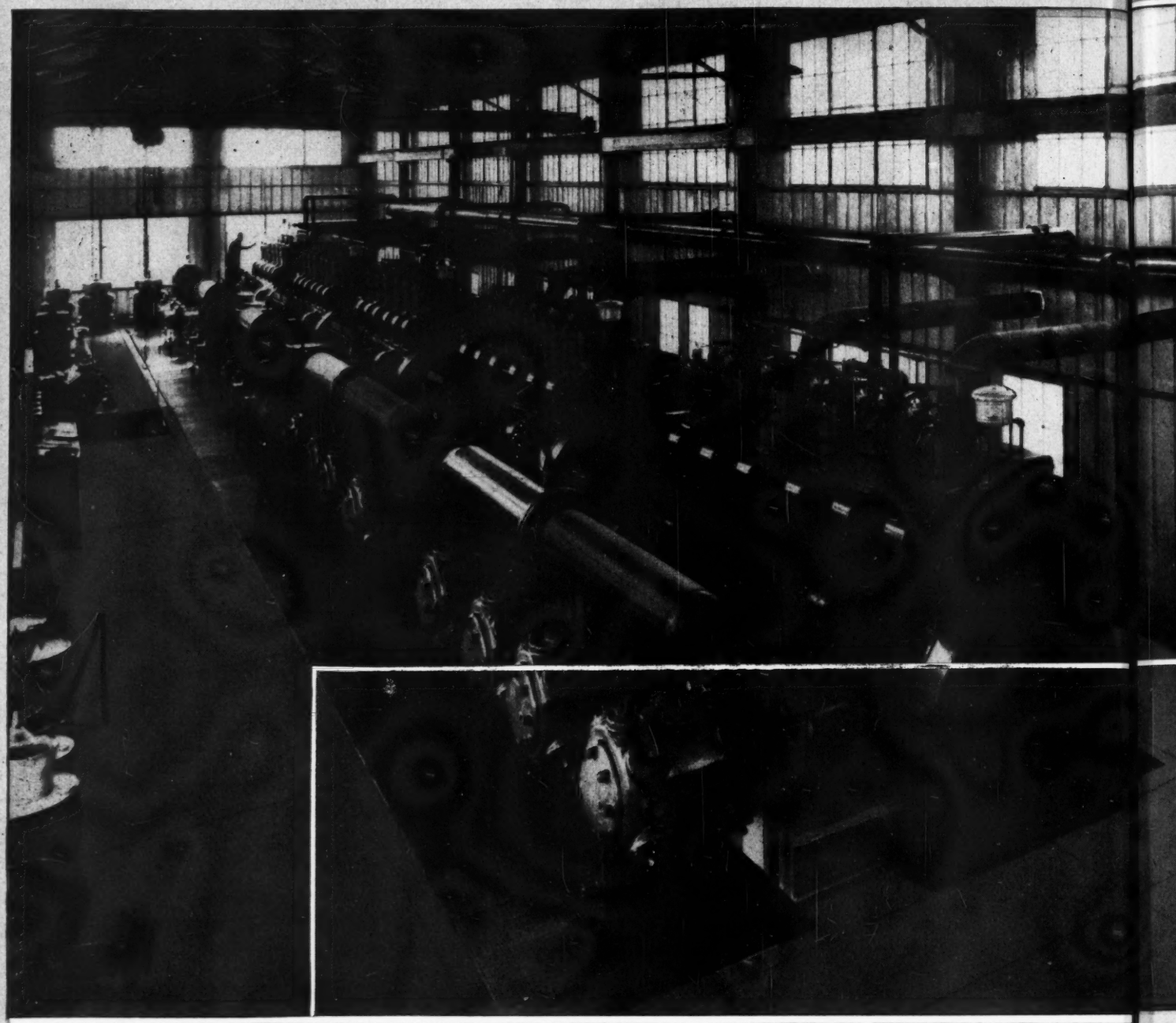
The Worthington Pump and Machinery Corp., Harrison, N. J., has purchased the Electric Machinery Mfg. Co., Minneapolis, Minn., according to a recent announcement made by Harry C. Beaver, Worthington president, and Walther H. Feldmann, president of Electric Machinery. This is the second important acquisition by Worthington within a year, the other being the Ransome Machinery Co., Dunellen, N.J., which became a wholly-owned subsidiary in July, 1943.

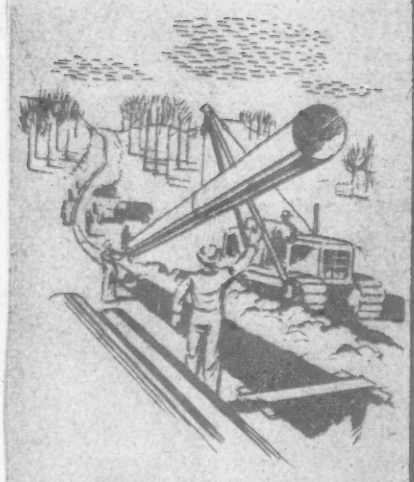
Electric Machinery, which was established in 1897, and has developed a world-wide business in the past 47 years, will continue to operate independently of the other Worthington activities. Its present executive personnel, Walther H. Feldmann, president; O. A. Soderstrom, vice president, in charge of manufacturing; R. H. Olson, vice president in charge of sales; and Fred W. Hotchkiss, secretary and treasurer, will continue in those capacities.

Horrigan Buys Truman

The J. J. Horrigan Construction Co., Houston, Tex., pipe line construction contractors, have purchased the equipment of J. C. Truman Construction Co., El Dorado, Kan. Most of the Truman personnel has been added to the Horrigan staff.

The Horrigan Co. has a contract for 47 miles of Tennessee Gas and Transmission Co. gas line from Texas to W. V.





East Ohio Gas Company has recently completed the final project in a vast expansion program to meet the mounting gas requirements of Ohio war industry. This is a 120-mile 20-inch pipe line which for the first time brings Texas-Kansas gas into the Ohio gas area, connecting at Maumee with the Panhandle Eastern line, from which it will take 50,000,000 cu. ft. of gas daily to meet increased demand requirements.

Surplus of this gas which occurs in periods of minimum demand will be repressured and pumped to storage wells by Robinson Station here pictured. It is powered with five 600 H. P.

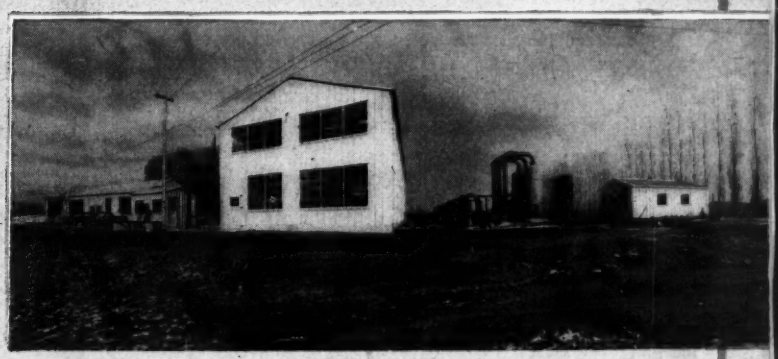
CLARK BROS. CO., Inc.

OLEAN, NEW YORK

Export Office: 30 Rockefeller Plaza, New York. Domestic Sales Offices and Warehouses: Tulsa, Okla.; Houston, Texas; Chicago, Ill. (122 S. Michigan Ave.); Boston, Mass. (Park Square Bldg.); Huntington Park, Calif. (5715 Bicket St.). Foreign Offices: London, England; Avda Roque Saenz Pena, 832, Buenos Aires.

3,000 H.P.
of CLARK "ANGLES"

Power East Ohio Gas Company's New Robinson Station



PANORAMA OF ROBINSON STATION

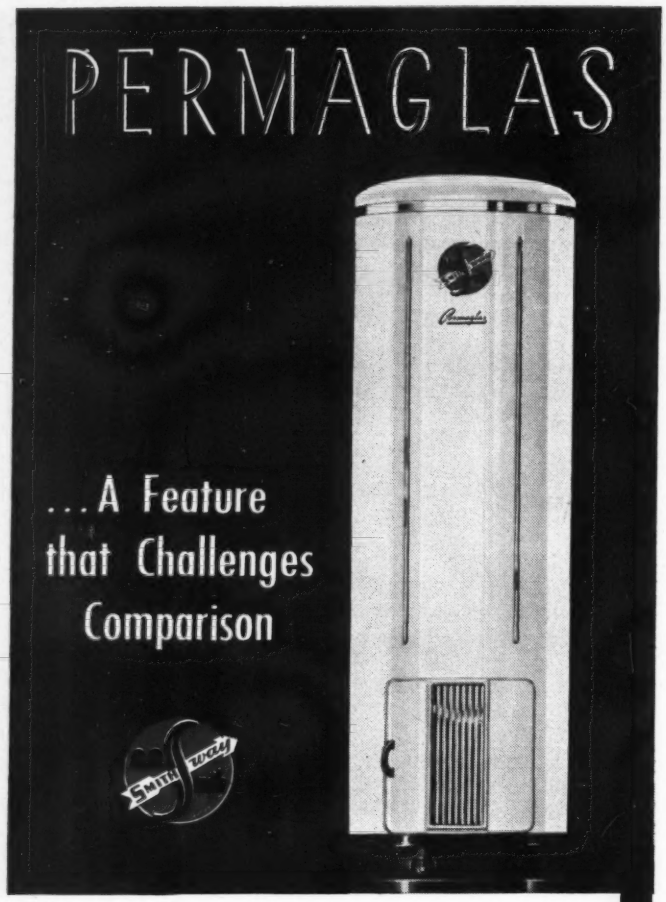
CLARK "Super-2-Cycle Angles." This is a unique two-function station. In summer it will pump the main-line gas into underground storage. In winter its high-pressure 2-stage cylinders are exchanged for low pressure cylinders, and the plant becomes a booster station capable of handling 200,000,000 cu. ft. of gas daily. Being designed for both pressures, this station has many unusual features.

Clark engineers have had years of experience in solving the world's most complex gas compression problems. Consult with them about your plans.

REAR VIEW OF COMPRESSORS
ROBINSON STATION

CLARK

One of the Dresser Industries



Glass is clean. It's sanitary. It's the answer to your postwar market that will demand newer and higher standards of perfection in hot water convenience, sanitation, and cleanliness.

That's why SMITHway Automatic Gas Water Heaters are lined with glass... *Permaglas*... a smooth, lustrous, sanitary, blue glass lining permanently fused to the inside of SMITHway Tanks.

Permaglas is the modern and healthful way of heating and storing *clean* hot water—just as clean as the water you drink from the tap.

MONOQUAD CONSTRUCTION ASSURES FLAWLESS GLASS LINING

The tank cylinder, the two heads, and the flue are individually glass lined before assembly. This permits minute inspection of every square inch of the glass-lined surfaces. When finally assembled by Smithwelding, the result is a strong, flawless tank that will give years of carefree service.

Write for further information and get the inside story on SMITHway Automatic Gas Water Heaters lined with *Permaglas*.

Have You Bought an Extra War Bond This Month?

A. O. SMITH Corporation
Milwaukee 1, Wisconsin

Offices at: New York, Pittsburgh, Chicago, Tulsa, Houston, Los Angeles and Seattle
In Canada: JOHN INGLIS CO., LIMITED

Permaglas Victory Model Heaters are available in all sizes in accordance with W.P.B. limitation order L-185.

SMITHway Permaglas GLASS LINED
GAS WATER HEATERS

Turner Valley Operators to Comply With Canadian Gas Act

THREE large Turner Valley operators, Madison Natural Gas Co., British American Oil Co., and Gas and Oil Products, will submit plans for carrying out provisions of the new Natural Gas Utilities Act, passed at the recent legislative sitting, it was announced following a meeting at Calgary, Alberta, of operators and producers with the gas utilities board.

The board consists of G. M. Blackstock, K. C., who is also chairman of the board of public utility commissioners, and Dr. E. H. Boomer, of the University of Alberta staff.

The act makes public carriers of all gas pipelines and other gas processing equipment except lines within a plant or within the limits of a municipality. It empowers the board to fix prices and to otherwise control the handling of natural gas. Principal purpose of the act is to open the natural gas market to all producers.

The City of Calgary presented its views on natural gas conservation before the Natural Gas Utilities Board of Alberta at a public hearing late in May at Calgary. The city urged the fullest conservation of Turner Valley gas, and suggested as part of conservation measures that gas cap wells should be underproduced and residue gas marketed first. Instead of the present three compression systems, the city also advocated one system of gathering lines and compressors under one control. According to the city report, the marketing of residue gas first would conserve the gas in the gas cap area and would leave less gas to be returned to the structure.

Home Canning Guide To Be Distributed by Servel

A Victory Home Canning Guide prepared by the foods editors of Better Homes and Gardens for Servel, Inc., Evansville, Ind., will be made available to the public through gas utility companies and by a free radio offer.

The radio offer will be made Saturday morning, June 17, on Servel's radio program, "Fashions in Rations" at 11:30 a.m. EWT. The offer will be repeated on the program of June 24, at which time Miss Myrna Johnston, associate editor of Better Homes and Gardens, will be the guest speaker talking on foods and home canning.

Gas utility companies have recently received announcement of the publication of this book, and it will be made available immediately to them for distribution to their customers.

The new canning guide is being published as a sequel to the Better Homes and Gardens' Victory Garden Guide which was distributed in part by Servel during March. At the time the Victory Garden Guide was published more than 100,000 copies were ordered by gas companies and the radio audience. To be able to properly supply the needs of the Home Canning Guide, Servel has had more than 200,000 copies printed.

Houston Natural Increases Well Holdings

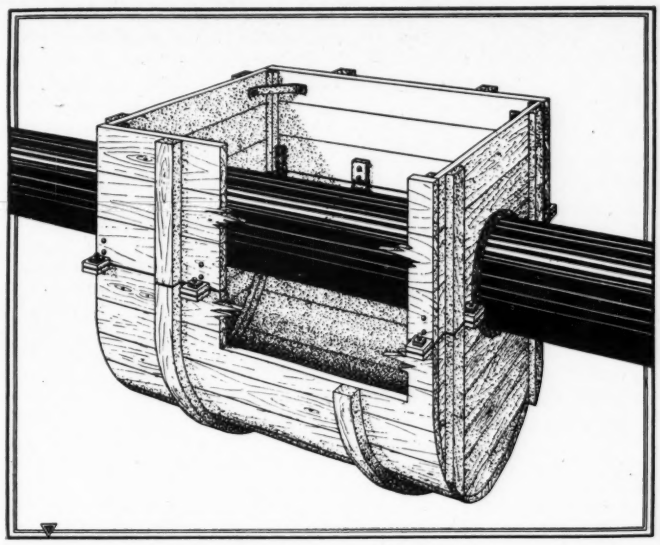
Anticipating a heavy postwar domestic customer demand in the fast-growing towns in its system, Houston Natural Gas has taken another step toward enabling itself to supply fuel by purchasing a second gas lease in the Clara Driscoll field in Nueces County.

According to Hillard W. Carey, company production engineer, Houston is thus preparing not alone for the immediate postwar period, but for the longer-term industrial era which is expected to result from the establishment of industries attracted to the Texas Gulf Coast region.

This purchase brings the number of producing gas wells in that multiple sand-field owned by the company to four. Another well, purchased in October 1939, is located near Port Lavaca.

Purdue Reports on Coal Hydrogenation

Purdue University has just published Report No. 1 on "The Hydrogenation of Coal at High Temperatures," by J. L. Bray, head, School of Chemical and Metallurgical Engineering and R. E. Howard, instructor in chemical engineering and assistant in the Engineering Experiment Station. Covering investigations sponsored by the Indiana Gas Association, his report is the first of a series dealing with this subject and refers specifically to Indiana coal.



Portable "bell-hole" which has been successfully tested in the Baton Rouge district of United Gas Pipeline Co.

Portable Bell-Hole

Developed and built by V. E. TURNER, section foreman, United Gas Pipeline Co., Shreveport, La.

A PORTABLE "bell-hole" which greatly facilitates the repairing of leaks in water and marshy areas has been successfully tested in the Baton Rouge district.

In this district, where much of our pipe line traverses marsh and bayou country, "easy digging" and the conventional type of "bell-hole" are out of the question. Cofer dams usually are not feasible due to the transportation facilities limited to pirogue and marsh buggy.

Breaks occur in pipe lines occasionally whether the line runs through hills or swampland, and necessity prompted pipe liners to tinker with an idea that has finally borne fruit. The resulting contraption, in effect a portable "bell-hole," is called a "bath tub" by the men who built and developed it.

The tub is constructed of wood and is built in two sections for handling and installing. The bottom section dips into the water to be slipped under the pipe with an under-swinging, rolling motion.

Th top or wall section is then bolted in place and water bailed or pumped out, leaving a clean, dry space in which to proceed with repairs.

It was made of heavy canvas, over a skeleton frame of wood ribbing on the order of a canvas canoe. In tests water pressure proved too great for the canvas tub, but practicability of the idea was demonstrated and construction of the all-wood tub followed.

George A. Ward, foreman, and the Houma section crew recently used the tub to repair a leak on the Lirette-Mobile 16-in. line, and H. F. Carr, Baton Rouge district manager, said its use was entirely satisfactory for the operation.

According to Mr. Carr, the tub remains dry, permitting complete repairs in a minimum length of time. Without the tub arrangement it would be necessary in some locations to shut the line down and raise the pipe for repairs.

New Draft Rules Affecting Utilities Issued

Men between 18 and 25 employed by public utilities are not eligible for draft deferment, according to draft regulations issued in May. Utilities may seek deferrment for employees between 26 and 29, subject to the action of local boards, with preference given to fathers. Deferment of men between 30 and 38 will probably be automatic for the remainder of the year.

ACHIEVEMENT
ARMY
E
NAVY
that challenges future effort
Promises are just promises unless kept; but performance is history. That's why we are proud of our Army-Navy "E" award. It expresses Uncle Sam's recognition of our contribution to this nation's production record . . . a performance that will live in history. As such, our "E" is not only a symbol of a vital job well done but an inspiring challenge to the men and women of General Controls. ★ We pledge ourselves to continue giving our best, and more, to produce Automatic Controls for America's needs. Today, tomorrow and until "V" Day, we will continue to earn our "E" by performance.
hi-g
GENERAL CONTROLS
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PEOPLE

• **Emery D. Sherwin,** former general superintendent of the San Diego Gas & Electric Co., has been elected a director and vice president in charge of operations, succeeding the late H. R. Peckham, who died May 13. He was first employed by the San Diego utility in 1915.

E. D. Sherwin

After World War I, in which he served as a first lieutenant in the engineer corps, Sherwin returned to the company as a surveyor. In 1923 he was made assistant superintendent of the electric distribution department, and the following year was promoted to assistant superintendent of the electric production department, a post he held until 1930, when he became assistant to the general superintendent.

When the San Diego Gas & Electric Co. was separated from the Standard Gas & Electric System, Sherwin was advanced to general superintendent.

• President **Sutherland Dows** of the Iowa Electric Light and Power Co., recently announced the promotion of two executives of long standing: **C. S. Woodward** elected to the office of vice president, continuing also as secretary, and **Hugh White** elected treasurer of the company. Two new members were appointed to the board of directors: **S. E. Coquillette** and **William C. Crawford.**

• **Harry McLain,** recently auditor of disbursements for Jersey Central Power and Light Co., has been elected to the office of assistant treasurer.

• Resignation of **David L. Edelmuth** as vice president and sales manager of the Grand Home Appliance Co., effective last June 1st, has been announced by President **James Mitchell.**

• Retirement on June 1, of **Harry L. Phelps,** assistant treasurer of the Southern California Gas Co., after 43 years of service, and the appointment of **Arthur E. Mason** as his successor, has been announced by President F. S. Wade. Mr. Mason has been with the company since 1917, holding the position of chief clerk since 1937.

• Marking the sixth 2-year term in that capacity, **Major T. J. Strickler,** vice president and general manager of the Kansas City Gas Co., has been unanimously re-elected to the board of directors of the chamber of commerce of the United States.

• **S. B. Irelan,** elected president of the Cities Service Gas Co. at Bartlesville, Okla., on April 17th, has been connected with the company and its subsidiaries in various capacities for the past 35 years.

S. B. Irelan

Upon graduation from the Engineering Department of Purdue University in 1909, he went to Denver, Colo., and enrolled in the Cadet Engineering Training School of the Denver Gas and Electric Co. After completion of this training school course. Mr. Irelan was made secretary and treasurer of the Fremont Gas and Electric in Fremont, Neb.

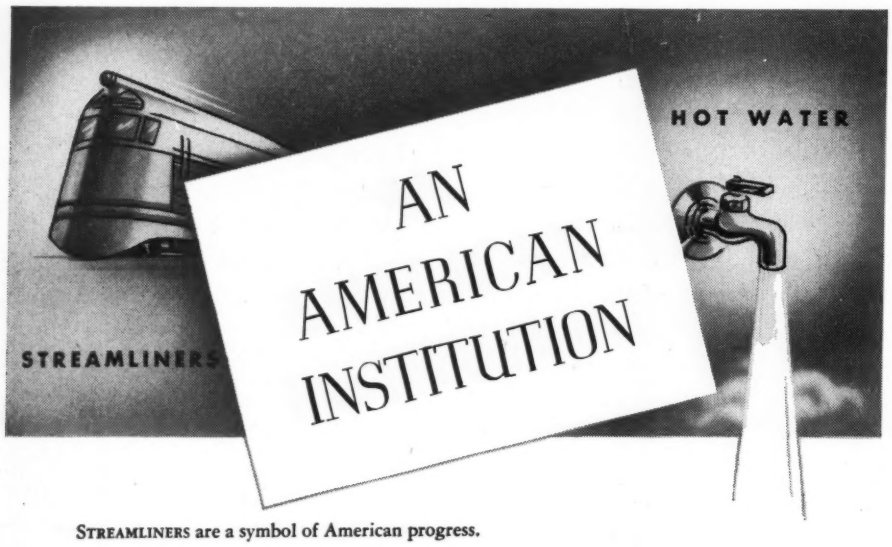
At the time of his election as president of Cities Service, he was serving as vice president of Electric Advisers, Inc., in charge of original costs, rates, and valuation studies. During his many years association with Cities Service and its subsidiaries he has held the positions of vice president and general manager of the Bartlesville Gas, Electric, & St. Ry. Co., Bartlesville, Okla., the City Light & Traction Co., Sedalia, Mo., the Montgomery Light and Water Power Co., Montgomery, Ala., and the St. Joseph Ry., Lt., Ht. & Power Co., St. Joseph.

Mr. Irelan has had broad experience in the engineering, operating, financing and management of gas and electric companies. At one time he was president of the Southeastern geographic section of the National Electric Light Association and also the Midwest geographic section.

• Heading the newly-merged Food and Household equipment editorial departments of McCall's Magazine, is **Elizabeth Sweeney,** appointed director.

• Appointment of five new managers in the ArkLaTex area, is announced by **D. W. Harris,** vice president of the Arkansas Louisiana Gas Co., Shreveport. **Earl Clifton** is now manager in Hope, Ark., succeeding the late **W. B. Steffey.** Other transfers: **Carlos Shell,** from Gilmer, Texas to Pittsburg, Texas, succeeding Mr. Clifton; **J. H. Knowles** to Gilmer; **Alton Bradley,** former acting agent at Mt. Pleasant, Texas, to Bernice, La. **J. S. Ripley** has been named acting manager at Nashville, Texas, replacing inductee **B. L. Cearley.**

• **N. B. Lantz,** formerly industrial gas engineer with the Public Service Co. of Indiana has been appointed manager, Standard Equipment Division of the Dempsey Industrial Furnace Corp., with headquarters at Mill River Lane, Springfield, Mass. In his new capacity he will head up the company's enlarged program for applied research and development of equipment for the utilization of industrial gas.

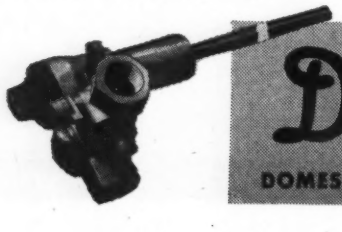


STREAMLINERS are a symbol of American progress.

HOT WATER, like streamlining, has become an accepted part of the American Way of Life.

WATER HEATER CONTROLS, the silent servants of gas appliances, have made it possible to have the comfort of hot water whenever it is needed.

DOMESTIC regards the nation-wide approval of its products as proof of their economy, safety and *dependability.*



Domestic

Water Heater Thermostats
Automatic Pilots
Room Thermostats

DOMESTIC THERMOSTAT CO., LOS ANGELES

• **George R. Conover** was elected vice president in charge of personnel and public relations of the Philadelphia Electric Co., at a meeting of the board of directors held April 25.

A registered electrical engineer, Mr. Conover spent 10 years with the Public Service Electric and Gas Co. of New Jersey before coming to this city in 1929 to become managing director of The Electrical Association of Philadelphia. In 1939, he was made manager of public relations of the Philadelphia Electric Co. In 1942, when the electric company's public relations and personnel departments were combined, he was appointed manager of the new department. He held that position at the time of his latest appointment.

• **S. B. Severson** was honored at a dinner party attended by 34 of his executive and supervisory associates in Buffalo, on the occasion of his 20th year of service as vice president and general manager of the Dominion Natural Gas Co., Ltd. and Republic Light, Heat & Power Co., Inc.

The many problems with which he has been faced in the two decades, including great electric competition and the rendering of gas service under many adverse conditions, were subjects of congratulations tendered Mr. Severson.

The Dominion Natural Gas & Republic Light, Heat and Power have been lauded for leadership in "employee selling," development of house heating sales programs, and for the National Best Performance Award in 1941 for CP gas range selling.

Mr. Severson is also vice president and director of five additional gas companies operating in the vicinity of Hamilton, Ontario, Canada.

• **John D. Killoren,** was recently appointed Director of Safety and Employment of The Laclede Gas Light Co., St. Louis, Mo., succeeding **John J. Barada.**

Mr. Killoren has served Laclede as statistical clerk (1917), chief voucher clerk (1918), statistician from 1924 to 1930. He became chief clerk of the auditing department in 1938, remaining in that position until his present promotion.

• Appointment of **George M. Cunningham,** chief geologist of Standard of California, as general manager of exploration was announced recently by Vice President **R. C. Stoner.**

Cunningham succeeds **Ernest G. Lawson,** recently elected president of Pacific Public Service Co., a Standard affiliate.

Moving up to replace Cunningham as chief geologist is **Dr. William S. W. Kew,** formerly the company's district geologist in Los Angeles.

A graduate of the University of California, Cunningham has been with Standard since 1921.

Kew holds a Ph. D. in geology from the University of California. He was with the United States Geological Survey for several years before he joined Standard in 1925.

• **Alexander Macomber** has been named head of the Fuel and Allocations Divisions of the Office of War Utilities. He is also chief of the Manufactured Gas division of OWU, in which capacity he will continue to serve. Macomber went to the WBP staff in September, 1942, from his consulting engineering firm in Boston—Macomber and West.

• **E. H. Rohrer** has been appointed gas engineer by B. C. Electric Railway Co. at Vancouver, B. C. Mr. Rohrer will succeed **John Keillor,** who recently retired from this post after 27 years with the company. Mr. Rohrer comes from the Montreal Coke and Mfg. Co. and will assume full charge of the B. C. Electric Co.'s gas department.

• **R. L. Morton,** veteran executive of Cities Service Oil Co. and subsidiaries, has been elected vice-president, treasurer and director of the company, it was announced May 17 by President **S. B. Irelan.**

• **Arthur Anderson** of Walla Walla, Wash., has been named general manager to succeed **Howard M. Thomas,** who retired as president and general manager of Northwest Cities Gas Co., of Walla Walla, it was recently announced. Thomas will continue as a director. He was associated with the Portland Gas & Coke Co. and Pacific Power & Light, before organizing Northwest Cities Gas Co.

Carboseal Anti-Leak

Gas company superintendent reports, "evermounting beneficial results."

A GAS company changed over from the distribution of wet manufactured gas to dry gas and later discovered considerable leakage in the bell-and-spigot joints of its gas mains. To stop the leaks, the joints in part of the system were recaulked . . . without success. The company later excavated through pavement on this part of the system . . . an expensive job . . . and clamped the joints.

On another part of the system the company superintendent then experimented with CARBOSEAL Anti-Leak, a liquid that swells the joint packing approximately 44 per cent in volume. Leakage was stopped. Three years later a recheck was made on the treated mains to determine the permanence of the Anti-Leak treatment. *On 4,000 feet of treated main, 65 previously reported leaky joints were tight and no other leaks were in evidence.*

The company now makes it a practice in all its dry-gas systems to treat bell-and-spigot mains with CARBOSEAL Anti-Leak before street paving. To date, 20,000 feet of 4-inch main, 10,000 feet of 6-inch main, and 5,000 feet of 8-, 10-, and 12-inch main have been treated. The company superintendent reports: "We are satisfied that this method of main treatment is effective and the program can be continued with evermounting beneficial results."*

If you have a leakage problem in bell-and-spigot joints, in a dry-gas system, use CARBOSEAL Anti-Leak. It may solve your problem as successfully as the problem was solved for this company. For further information write for the book, "Correcting Leakage in Gas Distribution Systems with CARBOSEAL Anti-Leak."

*Reprints of the superintendent's article are available.

CARBIDE AND CARBON CHEMICALS CORPORATION

Unit of Union Carbide and Carbon Corporation

30 East 42nd Street UCC **New York, N. Y.**

"Carboseal" is a registered trade-mark of Carbide and Carbon Chemicals Corporation.

PRODUCERS OF SYNTHETIC ORGANIC CHEMICALS

WAR ADVERTISING

☆

A FACTUAL REPORT

The P. C. G. A. Cooperative Advertising Committee, like individual gas companies, has converted much of its space to support of the war effort.

During the past 23 months, 20 domestic advertisements (full pages in color) have featured war subjects, with 12, or 60 per cent, of these devoted almost wholly to such government-favored projects as War Bonds, fuel conservation, Red Cross, nutrition and care of appliances.

Of the 89 advertisements—domestic and trade journal—published by the Committee during this period, 24 featured war projects, and 32 included War Bond or other war-supporting messages.

THE PACIFIC COAST GAS ASSOCIATION

GAS FUEL

SERVING THE WEST IN WAR AND PEACE

Manufacturers

• Worthington Pump and Machinery Corp. has appointed **Walter D. Smith** of Tulsa, Okla. as commercial vice president. A graduate of Carnegie Institute of Technology, Mr. Smith has been connected with the Worthington organization since 1923, except for a period of three years, 1933-36, when he was vice president and general manager of the American Natural Gas Co., Shamrock, Texas.

For the past four years Mr. Smith has been manager of Worthington's Tulsa District Office, as well as southwestern manager of the Engine Sales Division. In his new capacity, Mr. Smith will supervise the corporation's business in the Southwest.

• **Thomas J. Kehane,** of East Orange, N. J., has recently been appointed commercial vice president in charge of Worthington Pump and Machinery Corp.'s Pacific Coast activities. He will make his headquarters in new offices being opened July 1 in San Francisco also supervising the corporation's business in the territory served by its Salt Lake City district office.

Mr. Kehane started with the organization as office boy in 1915. He has been with the company continuously since that time for the last 19 years in the sales department.

• **Dr. Joseph G. Davidson** has been elected president of Carbide and Carbon Chemicals Corp. and Carbide and Chemicals, Ltd., Units of Union Carbide and Carbon Corp. He participated in the early work in synthetic organic chemistry which led to the foundation of Carbide and Carbon Chemicals Corp. He has served in this company in technical and executive capacities since its formation, having been vice president in charge of sales during the last 12 years.

Dr. J. G. Davidson

Arthur V. Wilker has been elected president of National Carbon Co., Inc., and Canadian National Carbon Co., Ltd., Units of Union Carbide and Carbon Corp. He became associated with National Carbon Co. in 1910.

N. J. Kenny, former general manager of the National Meter Division in Brooklyn of the Pittsburgh Equitable Meter Co., has been transferred to the home office where he will serve as assistant to Colonel **W. F. Rockwell,** president of the company. **A. R. Whittaker,** formerly factory manager of the National Meter Division, will assume the duties of general manager in charge of the Brooklyn factory.

• **Sherman K. Ellis & Co.,** New York, has been named by the Rheem Mfg. Co., N. Y., maker of household appliances and air conditioning units, to handle its advertising.

E. L. Payne

• The directors of Payne Furnace & Supply Co., Inc., peacetime heating manufacturers now devoted to war production, announced the election of officers at their quarterly meeting this week as follows: President, **El Roy L. Payne,** former vice president and general manager, succeeding the late **Daniel W. Payne,** his father; and as vice president, **John H. Keber,** former manager of the wholesale sales division. **Joe H. Wilson,** who continues as treasurer, was also appointed a director, and **Ruby M. Sorber** continues as secretary of the company.

• **H. Boezinger,** vice president, Merco Nordstrom Valve Co. and district manager, Pittsburgh Equitable Meter Co., Los Angeles, announces the following changes in their Pacific Coast offices:

E. H. "Ernie" Adams, well known in the Los Angeles Basin Oil Fields has been appointed assistant district manager and will operate out of the Pacific Coast District Office located at Los Angeles. **R. L. Ford,** formerly located in the Seattle Office has been transferred to the Los Angeles District Office where he will handle the sale of water meters in Southern California. **Gilbert Bowman** has been placed in charge of the San Francisco Office. **Frank Tangney,** formerly with the National Meter Co., which was acquired in 1941 by Pittsburgh Equitable, has been placed in charge of the Seattle office. Sales headquarters for the Pacific Coast of both companies are located at Los Angeles.

Boezinger also announces the installation of additional oil, gas, gasoline and water meter test, repair and service facilities at their Los Angeles plant.

• **F. C. Arens** has been appointed district manager of the Boston office of Pittsburgh Equitable Meter Co., and **Richard H. Smith** placed in charge of water meter sales for the New England territory, according to President Colonel W. F. Rockwell.

• **H. N. Mallon,** president of the Dresser Manufacturing Co., recently announced election of three vice presidents of the company following a meeting of the board of directors.

J. B. O'Connor has been elected executive vice president. **Arthur R. Weis** and **Lyle C. Harvey** have been elected vice presidents.

Mr. O'Connor has been a director of Dresser Manufacturing Co. since Aug., 1938. He is also vice president and general sales manager of Clark Brothers; chairman of the board of the Pacific Pump Works; and president of Bovaird and Seyfang, all subsidiaries of Dresser Manufacturing Co.

Mr. Weis is president of the Pacific Pump Works of Huntington Park, Calif., a Dresser subsidiary. Mr. Harvey is president of the Bryant Heater Co. of Cleveland, also a subsidiary.

C. P. Clark, president of Clark Brothers, who is already a vice president of Dresser Manufacturing Co. will continue in that capacity.

• **P. E. Fluor,** executive vice president and general manager of the Fluor Corp., Ltd., was recently elected president of the corporation, succeeding **J. S. Fluor, Sr.,** who was made board chairman. **J. S. Fluor, Jr.,** was named executive vice president and general manager.

• The appointment of **William F. Lamoreaux** to the position of research metallurgist has been announced by The Cooper-Bessemer Corp., 111-year old producer of Diesels, gas engines and heavy machinery.

Lamoreaux, who for the past three years was director of research for the Meehanite Metal Corp., will divide his time between the company's two plants, at Mt. Vernon, Ohio and Grove City, Penn.

Prior to his connection with the Meehanite Metal Corp., he was for the five preceding years a consulting chemical and metallurgical engineer following his position, from 1923 to 1936, as vice president and general manager of the Ducktown Chemical and Iron Co., Copperhill, Tenn.

Obituaries

• **Daniel W. Payne,** 77, president and board chairman of Payne Furnace & Supply Co., Inc., Beverly Hills, died May 26. Death followed a lingering illness of several years, resulting in partial retirement, during which his son, **El Roy L. Payne,** has been active head of the business as vice president and general manager.

D. W. Payne

As a young man Mr. Payne entered the sheet metal and furnace business, and upon coming to California in 1909, established the Payne Furnace & Supply Co., then located on N. Los Angeles St. After several expansions, the company moved in 1925 to a new, modern plant at its present site in Beverly Hills, and under the joint management of father and son, became, before the war, America's largest exclusive gas furnace manufacturer, with installations from coast to coast. For more than two years, however, its expanded facilities have been devoted exclusively to war production.

• Lieut. Col. **Ferris F. Hamilton,** vice president in charge of the Springfield office, Panhandle Eastern Pipe Line Co., until his recall to active duty in April, 1942, died April 13 of a heart attack at his home in Dayton, Ohio.

He was made chief of the personnel and training division of the Fairfield Air Service Command, Patterson Field Dayton, in December, 1943.

• **W. B. Steffey,** 55, died at his home in Hope, Arkansas, April 7. He was manager of the Arkansas Louisiana Gas Co., in Hope, Ark., and had been with the company 21 years.

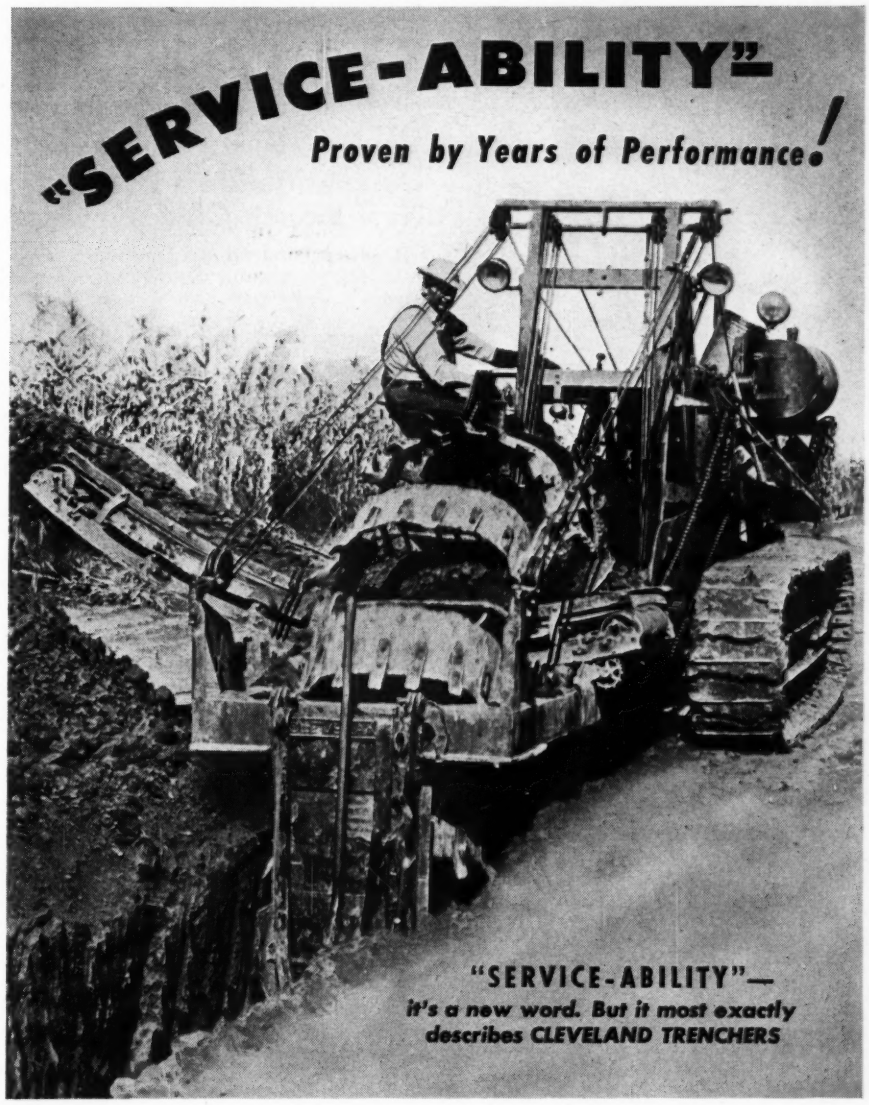
• **Luke C. Bradley,** 69, retired form… public utility executive, died at h… home in Lafayette May 12. He has serv… ed as president of Consolidated Electric… & Gas Co. and vice president of Stone… & Webster Service Corp., for which concern he organized utilities in nearly every state and in the Philippines and Argentina. Both firms are located in New York City.

• **Charles C. Hicks,** 57, supervisor of the accounting department of the Cincinnati Gas & Electric Co. since 1930, succumbed to a throat illness of several years standing, April 15. The last and fatal seige began two months previous.

H. R. Peckham

…R.
…e pres-
…arge of
… Diego Gas
… Electric Co.
died May 13. Born in St. Louis, Oct. 29, 1887, he graduated from Princeton University in 1909 with the degree of Civil Engineer.

He joined the staff of the San Diego company in 1912, serving successively as engineer, department superintendent, general superintendent and vice president.



• Many "Clevelands" built 15 to 20 years ago are still on the job today doing their part to ease the manpower shortage. • Although out-moded by "Cleveland's" modern standards of performance, this evidences the soundness and correctness of the basic design pioneered by Cleveland. • It also tells the story of "Cleveland's" policy of rendering prompt repair parts service even on these old machines. • This kind of service and this kind of ability are two more reasons why "Clevelands" continue to be the profitable long range investment in the trenching machine field. Guarantee yourself this "Service-Ability" in your Post-War trenching jobs by using Clevelands.

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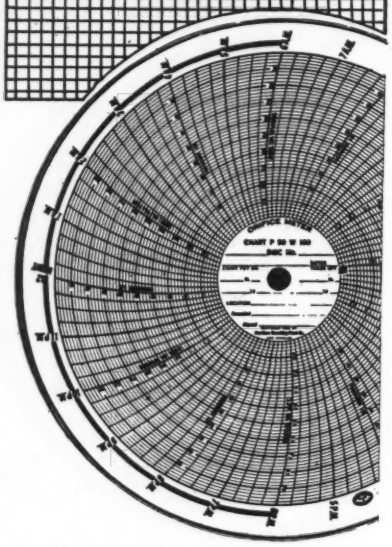
20100 ST. CLAIR AVE. "Pioneer of the Small Trencher" CLEVELAND 17, OHIO
"CLEVELANDS" Save More . . . Because they Do More

ARCCO
Accurate
CHARTS



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Check THESE Quality POINTS!

- Printed from ORIGINAL PLATES (no electros) to insure uniform accuracy.
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- QUICK DELIVERY. Approximately 2,000,000 charts of standard designs in stock at all times. Plates for special charts made in our own plant and charts produced in short time.

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Anticipate your year's requirements and place your order. We can then allocate the paper, produce the charts, and ship in monthly or quarterly installments, billing you as they are shipped. Entitles you to substantial discount.

Send For ARCCO CHART LIST

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Brooklyn Union Plans Refinancing of Debt

On June 15 the Brooklyn Union Gas Co. will hold a special meeting of the stockholders to consider and vote upon a plan for the refinancing of the entire $48,000,000 funded debt of the company.

According to the board of directors, the present favorable money market offers an excellent opportunity to place the debt on a 25-year basis at favorable interest rates. It is hoped to execute the plan by sale privately to insurance companies and others of new 25-year, 3¾% mortgage bonds (callable) in the amount of $30,000,000, by underwriting and offering publicly new 25-year debentures (callable) of $12,000,000 and by reducing outstanding debt by cash from the company's treasury of $6,000,000.

The debentures will be offered to the public through an underwriting group headed by F. S. Mosley & Co., who also are acting as agents for the company in the private placement of the mortgage bond issue.

General Controls Opens New Branch Offices

General Controls Co., Glendale, Calif., manufacturers and distributors of pressure, temperature and flow controls have recently occupied new offices at 687 Boylston St., Boston 6, Mass., and 1505 Broadway, Cleveland, Ohio, in line with the company's plans for strengthening field distribution and service facilities.

Manager of the Boston branch is William Marsh, a native New Englander, who has had 20 years' experience in the automatic controls industry, and who has been instrumental in the development of numerous controls for both the gas field and sectional control applications.

The Cleveland branch manager is L. E .(Rusty) Wetzel, a native of that city and a graduate of Purdue and John Huntington Institute Technical College where he majored in air conditioning, heating and ventilating engineering.

Air Conditioning Schools Continued by Servel

J. K. Knighton, manager of gas air conditioning sales, and John Gilbreath, assistant sales manager of gas air conditioning for Servel, Inc., who have been conducting schools all spring for men from gas utility companies throughout the country, will continue the meetings this month.

Week-long application, service, and sales engineering schools will be held at the factory in Evansville, Ind. The schedule of the schools in June include June 5-10, application engineering; June 12-15, service engineering; and June 19-23. sales engineering.

Kellogg Co. Scholarships

The M. W. Kellogg Co. has just made arrangements to sponsor two scholarships to the College of Petroleum Engineering at Tulsa, Okla. These scholarships have been established in accord with the current program followed by the majority of companies in the oil refining profession in endeavoring to secure the finest type of personnel.

NEW GAS PRODUCTION

• Discovery of a new oil field in Mississippi that may be as big as any in history was disclosed at a meeting of the Illinois Joint Legislative Petroleum Commission. The new field promises, from preliminary discoveries, to be as great as the East Texas petroleum pool, which in 14 years has produced 1,800,000,000 barrels of crude oil.

• **Middle States Petroleum Corp.** has sold six leases, owned and operated in the east Texas field on which 58 producing wells were located, to the **Tide Water Associated Oil Co.** for $25 million, Joseph Glass, president, disclosed in his annual report.

• **Standard of California's** Murphy Coyote 139, a regular development well in the West Coyote field of Southern California, surprised company officials this week by gushing oil from a supposedly non-flowing zone.

Target of the well was the Emery zone below 5000 ft. However it struck the 99 zone more than 150 ft. above and suddenly began to flow. Other wells producing from this upper zone have to be operated by pumps.

During the week Standard completed six and began operations on 10 new wells.

The company is rigging up a well on the 10,000 acre Suisun Community lease to continue exploring the gas production discovered recently by Honker 1-A on the north shore of Suisun Bay. Terchuren Unit well No. 2 has been completed at 3910 ft. in the Rio Vista gas field for satisfactory production of six million cu. ft. a day.

Jas. Graham Building Two Permitted Ranges

The James Graham Manufacturing Co., Newark, Calif., manufacturers of gas appliances since 1882, is now making two permitted-type ranges, according to E. J. Hinchey, sales manager.

One of these ranges is a bungalow, or kitchen heater model, the other a Victory type. The kitchen heater model is built according to the specifications of the company's pre-war models, with the exception that the heat control is omitted. While the Victory model is lighter than the other model, no substitute materials are used.

Company plans call for return to the manufacture of Wedgewood gas ranges in the postwar period.

New Canadian Plant Planned

Plans are being discussed in Kitchener, Ont., by the gas committee of the Public Utilities Commission for the construction of a new gas plant. Mayor Meinzinger, chairman of the committee, says that war production has pushed gas to the forefront as an industrial fuel. "Gas has a definite future in Kitchener and the new plant must be measured on the basis of the next 50 years," adds the mayor. Mayor Meinzinger reports that application of gas to house heating is another possibility the committee will study, so that facilities for such a service can be included in initial plans.

CURRENT READING

Arc Welding Pipe Lines—C. M. Taylor. "Petroleum Engineer," March, 1944, pp. 153, 154, 156. Trends in methods employed during year are discussed.

Concepts and Methods of Cathodic Protection—J. M. Pearson. "Petroleum Engineer," March, 1944, pp. 216, 218, 220. Part 1. Measurement of cathodic polarization and problems of interference on underground structures.

Pipeline Gas Engines Make Their Own Fuel From Crude Oil—"Power," March, 1944, pp. 168, 169. Vaporizing unit designed by Continental Oil Co. engineers uses exhaust heat to make high-Btu fuel for gas engines at small pipeline stations where bottled-gas delivery proves unreliable.

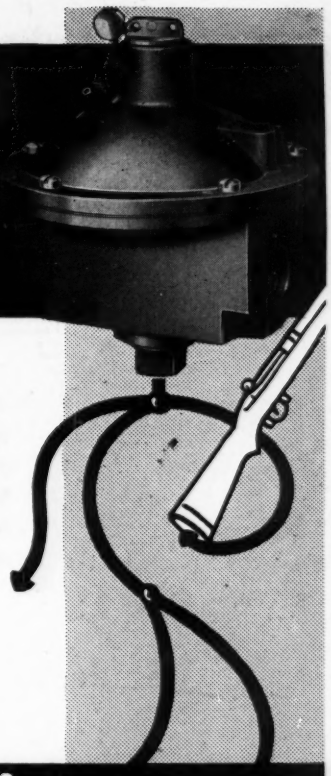
Critical Pressure Limits Isothermal Gas Flow in Pipes—R. C. Binder. "Power," March, 1944, pp. 154, 155. Flow of gas or air under high pressure drop reaches a limiting condition at sound velocity. What the limit is and how to calculate the corresponding pressure loss is developed in this article by the author.

Phase Equilibria in Hydrocarbon Systems. Volumetric Behavior of n-Butane—R. H. Olds, H. H. Reamer, B. H. Sage and W. N. Lacey. "Industrial and Engineering Chemistry," March, 1944, pp. 282-284. The volumetric behavior of n-butane was determined at seven temperatures, uniformly spaced, from 100° to 460° F., at pressures up to 10,000 pounds per sq. in. The results are compared with those from recent investigations by others and with predictions based upon the Beatty-Bridgeman equation of state.

Distillate Production Corp. of Houston Completes Its New Cycling Plant Designed for Obtaining High Percentage of Propane and Butane—E. H. Short, Jr. "Oil and Gas Journal," March 16, 1944, pp. 67, etc. High recovery of butane and propane from cycled gases in the Houston-Fairbanks area is the goal and achievement of this plant. The unitization plan is directed by a committee of three. Plant is now processing 53 million cu. ft. of gas per day containing about 2% propane, 1% butane and about 2% pentanes and heavier. Recent tests show 93% butane recovery.

Gas Turbines Offer Opportunities for Process Use—S. A. Tucker. "Chemistry and Metallurgy." March, 1944, pp. 96-99, 108. Although the gas turbine has been well known in the petroleum industry for the past seven years, where some 35 are now used as an auxiliary to the Houdry process, interest is rapidly increasing owing, perhaps, to announcements in connection with their use in jet propulsion for aircraft, and in airplane engine supercharging. As the most versatile type of prime mover, the gas turbine can produce compressed air, hot gas and by-product steam, in addition to power. In some cases it can operate on by-product heat from exothermic reactions. The theory and operation of the gas turbine are explained.

STANDING GUARD FOR *Economy*



Precision engineered for sturdiness, long life, and trouble-free service, the H-M Low Pressure Regulator saves labor and money. Regulating and controlling your gas flow through the use of H-M Regulators you can solve your pressure problem.

Send for complete details regarding available sizes and specifications.

HM REGULATOR CO.
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800 EAST 108TH STREET
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"DRY SEAL" HOLDERS
For Lowest Maintenance

The Stacey Brothers Klonne type Dry Seal Gas Holder is the most economical of all holders to operate and maintain. Our dry mechanical seal greatly reduces the corrosion problem with its attendant causes of constant repair and maintenance. The acid, debris, and freezing problems connected with liquid seals are all eliminated. Painting of the holder exterior is less frequently required, and the interior is protected from deterioration by the dry seal lubricant. Let us submit some important facts for your consideration—write today.

Photo shows a 1,500,000 cu. ft. Stacey-Klonne Dry Seal Holder located in the State of Michigan.

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GAS CONSTRUCTION CO.
Executive Office
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Cincinnati 16, Ohio
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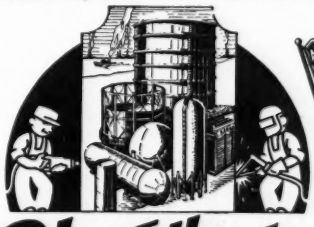
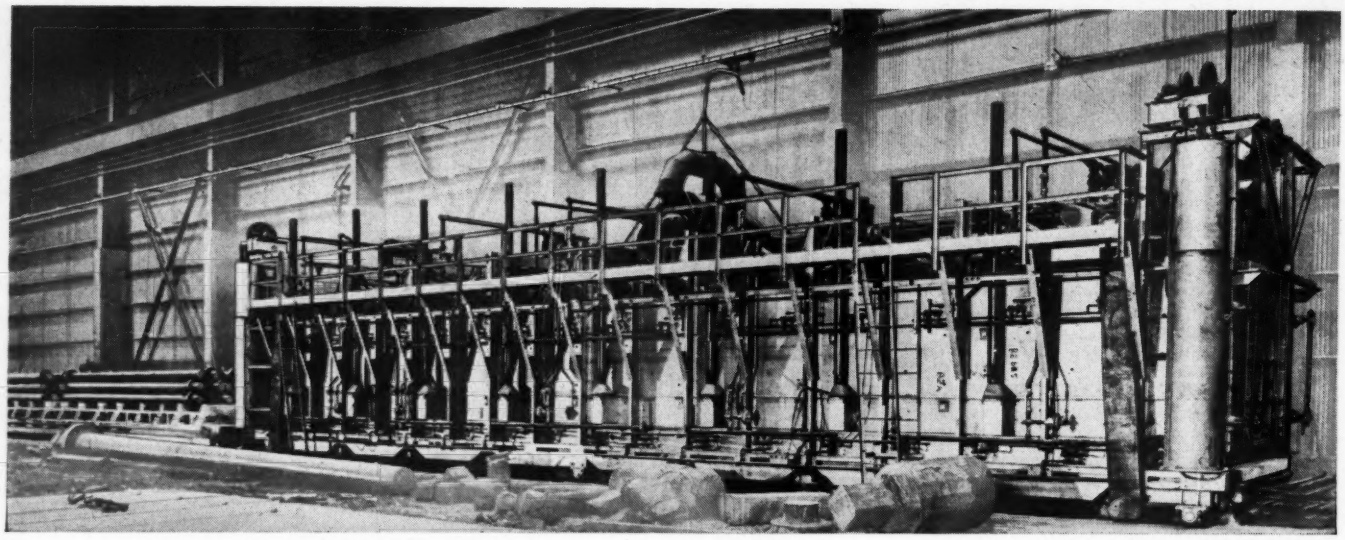


Stacey Brothers GAS HOLDERS
ENGINEERS • FABRICATORS • RECOGNIZED EXPERIENCE & FACILITIES



Double Hearth Rolling Furnace at Torrance Plant of the National Supply Co. for normalizing, annealing and tempering forgings up to 60 ft. long. Shafting on hearth at the left is cooling while that in the furnace is heating.

Double Hearth Rolling Furnace for Normalizing, Annealing, and Tempering

IN THE shafting department of the Torrance (Calif.) plant of the National Supply Co. is a double-hearth rolling furnace for normalizing, annealing and tempering operations at temperatures ranging from 800° to 1800° F.

The traveling unit includes all combustion equipment and controls, and is electrically self-propelled back and forth on a track by means of four driving wheels at each end. The two hearths are built stationary between the rails.

The hearth decks are constructed with a series of piers on which the work is placed by means of overhead cranes. While the forgings on one hearth are heating in the furnace, those on the other are allowed to cool, then are unloaded and replaced with a new charge.

The furnace has 10 automatically controlled and recorded heat areas. The combustion equipment is placed so as to both over-fire and under-fire the work, the under-firing burners being located between the piers. This method of firing helps to insure excellent temperature uniformity.

The usable inside space of the furnace is 8 ft. 6 in. wide, 6 ft. high, 64 ft. long, and will easily accommodate work up to 60 ft. long.

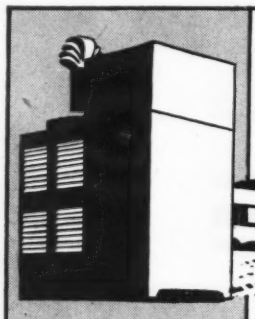
This rolling type of furnace saves a great deal of floor space. Moreover, it permits correct arrangement of the charge so that no disturbance is likely to occur which might cause kinking or similar trouble during the heating operations.

Here's to the SECOND DAY after the war

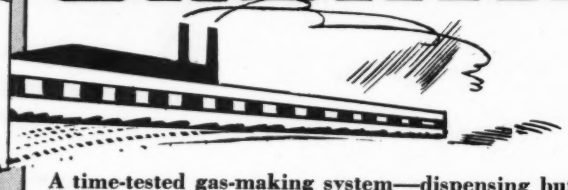
Don't look for us the first day after the war. We'll be out . . . *celebrating.* But the second day we'll be back cleaning up our war contracts so that we can plunge into production of even better Klixon snap-acting gas valves and thermostats to meet *your* post-war production demands.

SPENCER THERMOSTAT CO.

KLIXON
ATTLEBORO, MASS.



GASAIR



A time-tested gas-making system—dispensing butane-propane and air mixtures under rigid b.t.u. control —for stand-by or permanent operation.

GASAIR CORPORATION 1072 BRYANT STREET SAN FRANCISCO, CALIF.

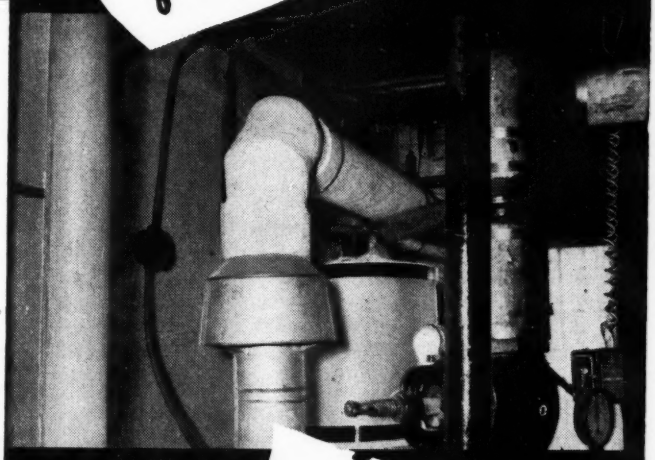
Dominion Natural Aids Blind

The Dominion Natural Gas Co. at St. Thomas, Ontario, helped in the annual campaign for funds by the St. Thomas and Elgin Advisory Board of the Canadian National Institute for the Blind by loaning the board a portion of the company premises for the week of April 10-15 as headquarters. As part of the campaign, a demonstration of weaving, chair caning and knitting was given in the gas company's large main window each day of the week, from 2-5 p.m., by Miss Nora Holstock, a blind St. Thomas woman.

It's non-metallic—cannot rust!

—light and easy to handle and support

—it never needs painting!



—and of course a complete line of fittings

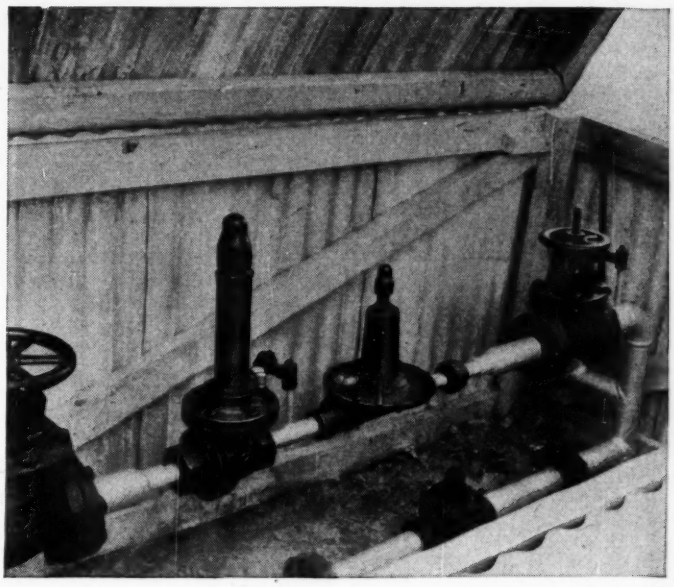
JOHNS-MANVILLE PRODUCTS

JOHNS-MANVILLE

TRANSITE FLUE PIPE

For venting gas-burning appliances

Be Safe with Triple or double reduction on HIGH PRESSURES



A Double Reduction High Pressure Installation

For high pressure Gas Control, REYNOLDS builds Regulators capable of reducing pressures as high as 2,000 pounds, but Reynolds Engineers recommend the greater safety of Double or Triple reduction installation. In the photograph above, we show an actual field installation. The first Regulator will handle pressures up to 1,000 pounds inlet pressure, reducing same to 100 to 250 pounds outlet pressure. In the second stage the inlet pressure of 100 to 250 pounds is reduced to an outlet pressure of 15 to 40 pounds. Pressure desired, size of pipe connections and other factors govern actual outlet pressures. All Reynolds High Pressure Regulators have the same extreme flexibility of control range that feature all Reynolds Regulators. Let the Reynolds Engineering Department aid in solving your Gas Control Problems.

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423 Dwight Building
Kansas City, Missouri

2nd Unit—Santa Fe Bldg.
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Eastern Appliance Company
Boston, Massachusetts

Wm. A. Ehlers
No. 268 Park Street
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Gas Control Since 1892

REYNOLDS GAS REGULATOR CO.

ANDERSON, INDIANA, U. S. A.

PIPELINE CONSTRUCTION NEWS

• **Oklahoma Natural Gas Co.** has completed Line A-130 extension in the Shawnee district, from a point 6 miles north of Holdenville, 34 miles south to the Citra and Lula Fields, the Southern Terminus ending in Coal County.

Constructed of 12 in. seamless pipe of 40 ft. lengths with triple bead electric welds at each joint, the line was tested at 1000 lb. pressure.

The **E. M. Campbell Construction Co.** was contractor in charge of construction, the work being completed in two months are now in operation transporting 12 million cu. ft. of gas daily.

• **Northern Natural Gas Co.**, Omaha, Neb., is seeking authority from FPC to construct 6.84 mi. of 8⅝-in. pipeline including 0.27 mi. undercrossing the Missouri River; a 5200-hp. natural-gas compressing station in Beaver County, Okla., and one additional 1000-hp. compressor unit at Skellytown, Tex.; 1600 ft. of 8⅝-in. pipeline on the eastern side of the Missouri River to a point where it will connect with the company's 14-in. and 16-in. line and to construct a regular station at the terminus of the existing line.

• Plans are being studied, the **Chemical Bureau of WPB** has announced, for construction of a 60-mile pipeline by **Phillips Pipeline Co.**, to carry 60,000,000 cu. ft. daily of natural gas from a Panhandle sour gas area to carbon black producing points in the Pampa-Borger field, making possible an additional 30,000,000 lb. of carbon black annually.

• Work is now under way on **Kansas-Nebraska Natural Gas Co.'s** 156-mi. gas line which is expected to be finished by Dec. 31.

The construction includes (1) a 41-mile 18-in. pipe line, Kearny County, Kan., to the company's Scott City compressor station; (2) 100 miles of 12¾-in. pipe line from the Scott City compressor station to a point about 15 miles southwest of the company's Stockton compressor station; (3) about 15 miles of 8⅝-in. pipe line running from this point to the Stockton station, and (4) four additional 500-hp. compressor units to be installed in the Scott City compressor station.

• **Panhandle Eastern Pipe Line Co.**, Kansas City, Mo., is seeking FPC permission to construct and operate additional facilities in Texas, Kansas and Indiana:

1. Approximately 17 miles of 22-in. pipeline parallel to Panhandle's existing 22-in. line between its Hansford County, Tex., and Liberal, Kan. compressor stations, including 4000 ft. of 24-in. pipeline undercrossing the Cimarron river.

2. Two additional 800-hp. compressor units and appurtenant equipment at the Hansford compressor station.

3. One additional 1300-hp. compressor unit and appurtenant equipment at the Montezuma compressor station, Vermillion County, Ind.

• **Cities Service Gas Co.**, Batlesville, Okla., and **Cities Service Transportation and Chemical Co.**, Ponca City, Okla., have made application to FPC to construct and operate additional facilities at Hugoton, Okla., field on joint-cost basis of $4,000,000.

Application seeks additional pumping equipment to increase the new 231-mile natural gas pipeline capacity to 220,000 cu. ft. per day by next fall.

• FPC has received an amended application by **Kansas Consolidated Gas Corp.**, Wichita, to install approximately 215 mi. of 18-in. natural-gas pipeline from Hugoton field, Stevens County, to Wichita, Kan., construction to start July 1, 1944 and to be completed Dec. 1, 1944, total cost being estimated at $4,996,190.

Facilities will include a gas compressor station of 5600-hp. at the western end of the line in Stevens County, Kan.; 215 miles of 18-in. line from the station northeast to 1 mile west of Wichita and 3 miles of 14-in. line to the Consolidated Gas Utilities Corp.'s Wichita town-border station and compressor station; a dehydration plant on the main gas transmission line, with 90,000,000 cu. ft. per day capacity at 700 lb. working pressure. Maximum gas delivered on peak day of any year expected to be 85,000,000 cu. ft. and minimum on any one day about 30,000,000 cu. ft.

Great portion of the gas will be delivered to Consolidated Gas Utilities Corp., an affiliate, whose basic sources of supply have been depleted by abnormal war demands, the line thus taking care of part of existing natural-gas shortage in Kansas City and Wichita areas.

• **Pacific Lighting Corp.**, Los Angeles, is making preliminary plans for the construction of a 26-in. pipe line from the Hugoton gas field of Okla. and Kan. to Riverside, Calif., where it will connect with systems of affiliated companies.

Expected to extend for a distance of 950 to 1000 miles following the general direction of U. S. Highway 66 and the TWA airline route via Gallup, N. M. and Needles, Calif., some surveying has already been done.

Purchase arrangements for the gas are being discussed. Although regarded as a postwar undertaking, the demand for gas on the Pacific Coast may necessitate starting the project within a year.

• FPC has announced hearings set for June 12 and 13 at Ft. Worth, Tex., on amended applications by the **El Paso Natural Gas Co.** for authority to operate additional facilities in connection with loop lines in New Mexico and Arizona.

Facilities described in the first application include 44.61 miles of 12¾ in. pipeline extending in a southwesterly

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direction from El Paso Natural's Eunice compressing station in Lea County, New Mexico to a point of connection with the company's 8⅝ in. line.

The company will also seek a certificate of public convenience and necessity to construct and operate 31.5 miles of 16-in. pipeline beginning at the Eunice compressing station and extending in a southerly direction to El Paso Natural's Jal plant No. 1 in Lea County, N. M.; five 800-hp. gas compressor units at the Eunice compressing station; two 24-in. gas scrubbing towers at the Eunice station, and two 24-in. gas scrubbing towers at Jal plant No. 1.

• **Hope Natural Gas Co.** and **New York State Natural Gas Corp.**, two subsidiaries of Consolidated Natural Gas Co., have been authorized by FPC to construct a new pipe line, at cost of $3,473,863, to provide northern Pennsylvania and western New York with additional natural gas.

Extending from Wetzel County, W. Va., to Clarion County, Pa., and handled by four spreads, the line will consist of 150 mi. of 12-in. with 9/32-in. wall thickness, the Pennsylvania section being built by Hope and the New York section by the New York State Company.

• Contracts for the first two sections of the $4,000,000 pipeline project connecting the La Goleta dry gas field near Santa Barbara with Los Angeles were awarded to the **Pacific Pipeline Construction Co.** late in May. (Gas, April, 1944, p. 47.)

One of these sections, it is learned from vice president Wm. Moeller, Jr., will be constructed for the Southern California Gas Co. and comprises 55 miles of 18-in. pipe. The other section will be built for the **Southern Counties Gas Co.** and **Pacific Lighting Corp.**, and comprises about 36 miles of 16-in. line including 1.6 miles for Pacific Lighting. It is exepected the job will be completed by Nov. 15.

In addition to these two sections, for which contracts have been let, Southern California Gas Co. plans to award a contract in the near future for the installation of 12 miles of 22-in. line from Haskell Avenue to the Hollywood holder station.

• The FPC has set oral argument for July 7, 1944, in Washington, D. C., on the application filed by the **Wisconsin Southern Gas Co.**, asking the FPC (1) to order the **Natural Gas Pipe Line Co. of America** to extend its facilities to a point of connection with the applicant's proposed facilities near Genoa City, Walworth County, Wis., and to sell and deliver natural gas to meet the demands on the applicant's system and (2) to issue a certificate of public convenience and necessity to authorize the Wisconsin Southern to construct and operate approximately 10 miles of 4-in. pipeline extending from the city of Lake Geneva, Wis., to the Wisconsin-Illinois state line near Genoa City to connect the applicant's distribution system with the Natural Gas Pipe Line Co. of America's pipeline facilities.

Houston Natural Continues Pressure Cooker Program

Last summer when it appeared that Texas Gulf Coast Victory Gardeners were faced with no safe, approved way of processing their surplus vegetables due to the scarcity of pressure cookers, Houston Natural Gas Co. stepped in to alleviate the crisis by purchasing, and making available on a free loan basis, 61 cookers.

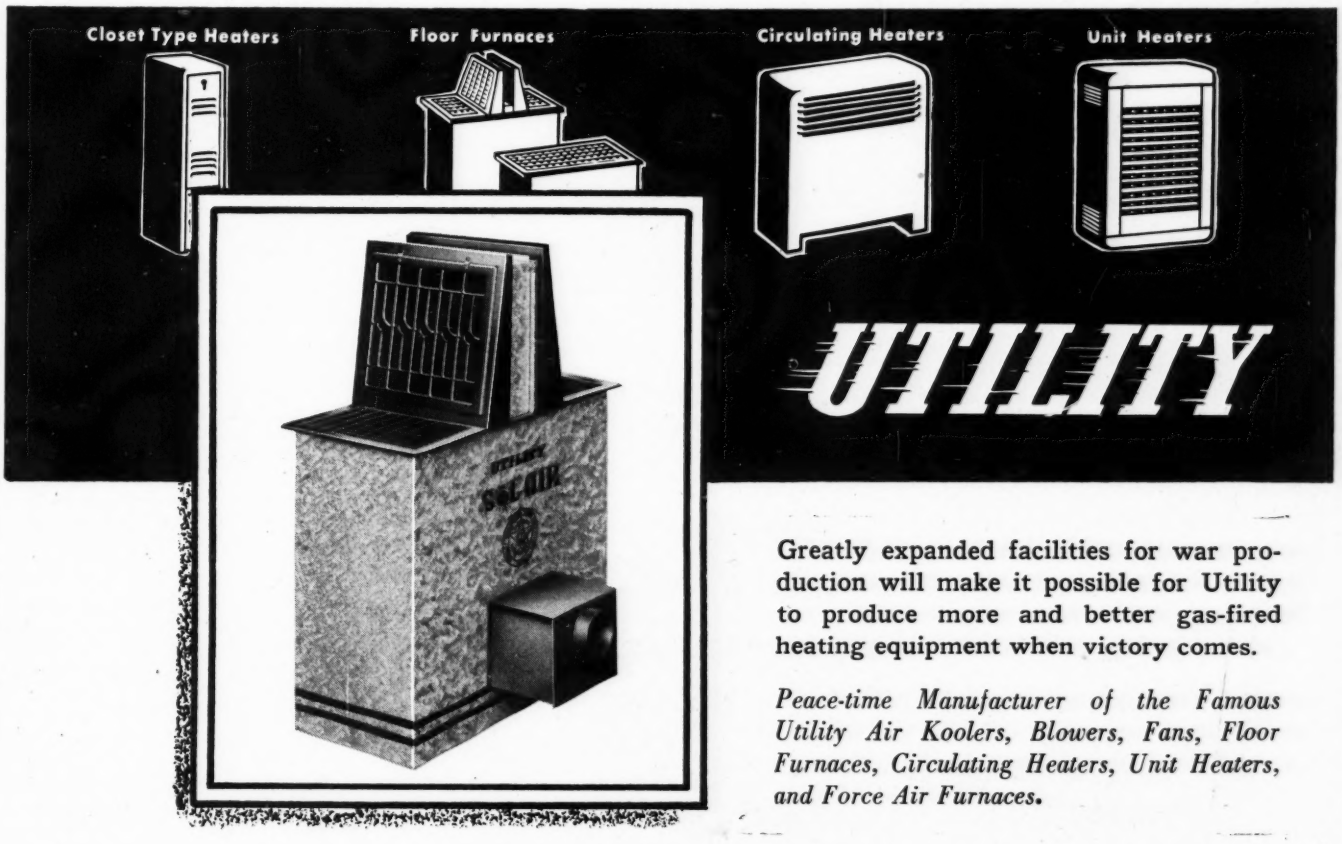
The immediate and enthusiastic public response caused the program to be set up on a year 'round basis, with meats substituting for vegetables during winter months.

Summer reservations are now being received in district offices of the gas company and it is anticipated that every cooker will be in constant use for the next couple of months, processing a wide variety of fruits, vegetables meats and miscellaneous foods.

New Dehydration Plants On Gas Service Lines

The Gas Service Co. of Kansas City, which for the past two years has served a number of alfalfa dehydration plants and egg drying plants, will soon be supplying two or more alfalfa plants, a large potato drying plant in Topeka and several soybean plants which have been located in cities served by the company.

Food dehydration is an industry which has made swift progress since the start of the war.



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Sales Offices in Principal Cities

Bristol Co. Opens Branch Office in Houston

The Bristol Co., Waterbury 91, Connecticut, manufacturers of automatic control and recording instruments has opened a new branch office in Houston, Texas, according to an announcement by H. E. Beane, sales manager of the company. The new office will be located in the Citizens State Bank Bldg. and will serve the states of Louisiana and Texas with the exception of the Panhandle section.

D. D. Ault who has been resident sales engineer in Houston for The Bristol Co. for a number of years will be in charge of the new office.

Mr. Ault was graduated from the University of Arkansas with a degree of B.Sc. in electrical engineering in 1924 and after a year of study at the Chicago Central Station Institute became associated with the Oklahoma Power Co. as assistant operating engineer. He joined The Bristol Co. sales organization in 1926 as sales engineer. Before being appointed Houston resident sales engineer in 1936, Mr. Ault was associated with the Bristol Pittsburgh, Philadelphia, and New York branch offices.

Dugas Engineering Expands

To provide needed additional space in which to handle the firm's increased metropolitan business, Dugas Engineering Corp., a subsidiary of Ansul Chemical Co., Marinette, Wis., has occupied new office quarters in New York City. The company shares space with Ansul in the Lincoln Bldg. at 60 E. 42nd St. Glen Stratton is in charge of Dugas and T. R. Kearney represents Ansul.

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AWARDS

• To **George D. Roper Corp.**, peacetime manufacturers of gas ranges, their third Army-Navy Production Award for outstanding achievement in production of war materials.

• **The Buda Co.**, which has been almost 100% involved in the war effort for the last four years, was awarded the Army-Navy "E" flag on April 27. The ceremony was attended by over 5000 people, including employees and guests.

• W. A. Ray, president and chief engineer of **General Controls Co.**, Glendale, Calif., recently accepted the award of the Army-Navy "E," on behalf of the personnel of the company. General Controls manufactures a complete line of automatic temperature, pressure and flow controls, maintaining branch and sales and service agencies in principal cities.

• Organized at the outbreak of the war to guard vital plants and gas facilities, **Southern California Gas Co.'s** Auxiliary Military Police Unit won high recognition on April 27 when the "auxiliary military police guidon" was awarded the group at a ceremony held before officials of the Army, the sheriff's department and the company.

In awarding the guidon to the unit, Lieut. Col. Leonard Dykes, staff officer, Southern Securities District, lauded the work done by the organization in protecting company installations.

Cities Service To Divest Some Utility Interests

In a petition filed May 19, Cities Service Co. told the Securities and Exchange Commission it would retain its oil, wholesale natural gas and certain related businesses, and dispose of its utility interests "to the extent necessary to relieve it from regulation under the holding company act." The petition was in response to the commission's divestment order of May 5, which gave the company the alternative of eliminating all its utility holdings and remaining in the oil business or of retaining its Mid-Continent distribution properties and disposing of all other utility or non-utility holdings.

Air Conditioning Plans Furthered by Servel

The gas air conditioning department of Servel Inc., has released to 300 cooperating gas utility companies a sales promotional plan book on the Servel All-Year Gas Air Conditioner entitled, "The Next Step in Postwar Action," it was announced by Geo. S. Jones, Jr., Servel's vice president in charge of sales.

The plan book covers such points as third party contacts and how to make them; building of acceptance among commercial prospects; preselling the ultimate domestic consumer; and building postwar interest by using publicity and advertising media.